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MESSAGE FROM DR. KHAN

Dear Students,

As many of you **start or re-start your preparation for this prestigious exam this month**, let's delve into the profound impact of **clarifying your purpose. This understanding will not only guide your journey but also transform** it, empowering you to take control of your path towards achieving your goal.

The right gate to enter a state of competition is **the gate of "why" instead of "how"**. Before you explore the intricacies of any preparation, you must answer a vital question - **why do you want to enter the competition?** This intrinsic motivation serves as a driving force that will propel you towards your objective.

The **"why" represents the deep-rooted aspirations**, whether it be a desire to serve the nation, fulfil familial expectations, pursue personal growth, or harness the strength the goal offers upon accomplishment. Allocate time to introspection, allowing yourself to consolidate your reasons for seeking the task. **Recognize that the power of purpose lies within.**

Even if your reasons may appear trivial to others, if they resonate profoundly within you, they possess the potential to drive your unwavering commitment.

Once your purpose is crystal clear, you can navigate any path towards achieving your goal. The **'how' becomes secondary to the unwavering determination** and direction that stems from understanding the **'why.'** **This unwavering commitment is what will keep you focused and determined in the meta-competition.**

Rather than fixating on a specific approach, adopt any of the multitude of routes available. As long as your purpose remains unwavering, you possess the **resilience and adaptability** to overcome challenges and forge your path to success.

Before embarking on the "meta competition" journey, you must **connect deeply with your purpose.** By investing time in self-reflection and consolidating your reasons, you must cultivate an unbreakable commitment that transcends procedural guidance. Understanding the "why" empowers individuals to adapt, persevere, and navigate any path towards their desired destination. With absolute clarity of purpose, **success becomes an inevitable outcome.**

**My best wishes are always with you.
Stay Blessed!**

GS CONNECT

It gives us immense pleasure to present an innovative approach to mastering current affairs. Current is a passing wind and diverse issues happen at the same time. It is to an extent chaotic. Newspapers, magazines, and various other sources report the chaos per se. With our experience of current affairs, we have tried to give "the current" a medium to travel. It is the syllabus of the UPSC with its components that are the medium through which the "Current is Passed" to the readers. **Ever since the new syllabus of the UPSC came into existence, the current has been gaining significance both at prelims as well as mains examination.** This book is meant to cover current affairs and related questions arising from those events. We have not only covered the current events for their factual contents but also presented them in such a way that any question asked from that topic gets covered. Moreover, topics are **also "peppered"** with the relevant facts/key concepts that are related to the theme.

It is a collection covering myriad sources yet in a manageable size. To use this book, we recommend you to, master the components of the General Studies (GS) syllabus as broken into rows and columns (**provided on the subsequent page**). Each cell comprising the portion of GS becomes the connection for the current and every news subsequently covered guides the reader to the address of the syllabus. It is logical to expect that the same issue may be connected to more than one topic of the syllabus. Further, the news also has some additional vistas opened for the readers by adding a box with the title **"PEPPER IT WITH"** where we expect the students to build further around the theme. We are also trying to reach the remotest part of the country with our spirit and zeal of **"Mains Answer Writing"**, which has been admired by students, CSE rank holders, and other scholars. Continuing in line with the effort, we have started **programs like KTP Mains Test Series, Destinaire, Navigator, NEEV, AWSDP plus, KOL, DL& MP, Advance Foundation Course, Weekend Courses as well as Optional Courses (PSIR, Sociology, History, and Geography).**

Additionally, this month, we are introducing a new section called **"SNAPSHOTS,"** offering themes **inspired by** four monthly magazines to provide comprehensive coverage of various topics. We are also providing a **complimentary full-length test** with 100 objective questions. **Scan the QR code** to revise the previous month's current affairs and test yourself.

When it comes to evaluation, we are all together at a different level. We are also reaching every nook and corner with this expertise for the aspirants of CSE. Now you can write a Mains Answer and get it evaluated by our Expert Team and can get Feedback. Drop a mail at **evaluation@ksgindia.com** to register yourself in our race to perfection. Don't wait, it's your golden chance to crack this exam and fulfill your passionate dream.

Team KSG

S. No.	GS- I	GS- II	GS- III	GS-IV	Mis
1	Indian Culture-Art Forms, Literature and Architecture from ancient to modern times.	Indian constitution- Amendments, acts and bills.	Various measures to boost Indian economy- planning, policies, management	Ethical issues related to family society, education, Corruption etc.	
2	Indian History significant events, personalities, issues and the Freedom Struggle.	Legislative, executive and judicial processes.	Government budgeting and issues related to budget.	Ethics in public and private administration	
3	Post independence issues, National boundary and disputes.	Constitutional, non-constitutional, judicial, quasi-judicial, administrative and other types of bodies.	Agriculture, animal husbandry and transport	Issues	
4	Indian society features, issues, globalization and diversity	Federal structure and local bodies. Their powers and functions.	Food security- measures to boost food security and food processing. Issues related to land- land reforms	Related laws and rules	
5	Women - issues and developments	Government policies and various governance issues like transparency, accountability and – governance	Industries and infrastructure- their growth and investment model	Governance/e- Governance	
6	Urbanization – problems and remedies	Committees and schemes.	Space and technology, IT space, robotics and computer	Ethics in international issues	
7	Distribution of industries and resources – India and world	Non-government issues, self-help groups and role of civil society	Disease, biotechnology and human welfare	Personalities and their teachings	
8	Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc	Vulnerable sections of our society and social sector issues like Poverty, Hunger, Education, and their initiatives.	Innovations, intellectual property, Awards, POI and other important aspects of S&T	Other important topics	
9		International Relation- India and other countries, various Indian and international agreements, effects of other countries on India and international institutions.	Environment; government initiatives, various judgment, pollution, degradation and conservation efforts		
10			Disaster & Disaster Management		
11			Challenges to internal security, Various Security forces and agencies and their mandate. Cybersecurity; money laundering and its prevention.		

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POLITY

Constitutional Morality

News Excerpt:

The Chief Justice of India (CJI) elaborated on **the notion of 'Constitutional Morality'** as a restraining factor for the state that should be derived from the Preamble of the Constitution.

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CJI's remarks on Constitutional Morality:

- Morality imposes restraints on the rights of citizens, whereas Constitutional Morality serves as a restraint on the state.
- Constitutional morality is an overarching principle that is derived from but is not confined to, specific rights or values that are enshrined in the Constitution.
- It **promotes Diversity, Inclusion, and Tolerance**.
- It is crucial for all levels of the judiciary, from higher courts to district courts, where common citizens first engage with the legal system.
 - Judges must ensure their personal ideologies do not override constitutional morality, maintaining their role as servants, not masters, of the Constitution.
- He also highlighted the **language barrier** faced by common citizens and discussed the **Supreme Court's initiative to translate 37,000 judgments into all recognized languages of the Constitution, including Bengali**.

What is constitutional Morality?

- Adherence to the **fundamental tenets of constitutional democracy is known as constitutional morality**.
- It refers to the **ability to successfully balance the competing interests of various parties** with administrative cooperation in order to resolve disputes amicably between the various interest groups.
- It is a **belief** that ought to be **ingrained in the hearts of law-abiding citizens** and upheld by a fair judiciary that upholds moral standards.
- Constitutional morality offers a **moral framework** for understanding how to carry out governmental functions.
- It outlines **expectations for behaviour that will adhere to the Constitution's spirit** and the necessary standards for institutions to survive. Additionally, it holds representatives and the governing bodies responsible.
- On November 4, 1948, before the Constituent Assembly, **B.R. Ambedkar said that "Constitutional morality is not a natural sentiment. It has to be cultivated.** We must realize that our people have yet to learn it. Democracy in India is only a top-dressing on an Indian soil, which is essentially undemocratic."
 - To him, it meant **"a paramount reverence for the forms of the Constitution"** and those forms of the Constitution must be sacred in the eyes of both those who are in power and his opponents.

Provisions of the Constitution upholding Constitutional morality:

- **Article 14:** Ensuring equality before the law.
- **Article 19:** Guaranteeing freedom of speech and expression, with reasonable restrictions.
- **Article 21:** Protecting life and personal liberty.
- **Article 25:** Ensuring freedom of religion.

SC Judgements that upheld Constitutional morality over public morality

- 01 NAVTEJ SINGH JOHAR VS. UNION OF INDIA (2018)**
Decriminalizing consensual homosexual acts, emphasizing individual dignity and equality.
- 02 INDIAN YOUNG LAWYERS ASSOCIATION V. STATE OF KERALA (2018)**
Allowing women of all ages to enter the Sabarimala temple, reinforcing gender equality and religious freedom.
- 03 JOSEPH SHINE V. UNION OF INDIA (2018)**
Decriminalizing adultery, emphasizing individual autonomy and equality.

Significance of Constitutional Morality:

- Upholds the rule of law while incorporating society's shifting aspirations and ideals.
- Highlights the importance of maintaining public's faith in democratic institutions and making it possible for individuals to work together and coordinate to pursue constitutional goals that cannot be achieved alone.
- Use laws and other legal structures as tools to **influence and transform ingrained social morality**.
 - For instance, when the practice of Sati was outlawed through legislation, widows received the right to dignity and life.
- Acknowledges **the plurality and diversity in society**. It makes people and communities more inclusive in how they function by continuously offering room for improvement and reforms.
 - For instance, the SC provided a framework in Navtej Singh Johar vs. Union of India to reaffirm the rights of LGBTQ and all gender non-conforming people to their dignity, life, liberty, and identity.

Concerns:

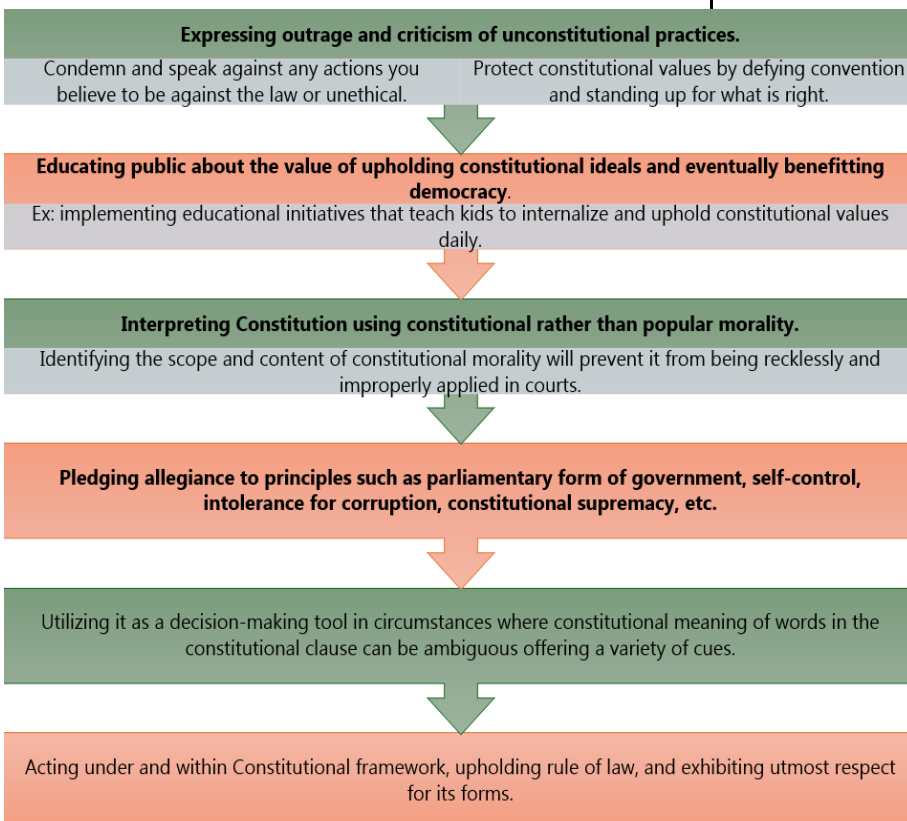
- **The SC has yet to define the term precisely, leaving it open to the judges' subjective interpretations.**
- This top-down approach to morality may hamper the possibility of organically emerging solutions to society's enduring ethical issues.
- **It establishes judicial supremacy over parliamentary supremacy, violating the separation of powers principle.** It goes against the fundamental tenets of democratic government.
- This doctrine pits "constitutional morality" against "societal/popular morality" and, many times is labelled as **judicial overreach.**

Need to Uphold Constitutional Morality:

- Freedom and self-control are the two main tenets of constitutional morality. The preservation of freedom under an appropriate constitutional government required self-control.
 - In order to uphold constitutional morality, social and economic goals must be achieved using constitutional means.
- Dedication to the Constitution's goals and ideals.
 - **Creation of public awareness about the rights that the Constitution guarantees.**
 - **Exercising fundamental rights while adhering to fundamental duties.**

PEPPER IT WITH:
Fundamental Rights,
Judicial Overreach

Way Forward:



The effectiveness of constitutional laws depends on constitutional morality. A constitution's operation tends to become arbitrary, unpredictable, and capricious without constitutional morality.

SC: Divorced Muslim women entitled to maintenance

News Excerpt:

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In a landmark decision, the **Supreme Court (SC)** ruled that **Muslim women** are entitled to seek **maintenance** from their husbands under **Section 125** of the **Code of Criminal Procedure (CrPC)**. This section applies to **all women, regardless of their religion.**

More About News:

- The judges emphasized that **Section 125 of the CrPC**, which addresses a **wife's legal right to maintenance, includes Muslim women.**
- The bench highlighted that **maintenance is a right of married women, not a charity**, and it applies to all married women irrespective of their religion.

Muslim Women (Protection of Rights on Marriage) Act, 2019:

- This act **criminalized the practice of triple talaq**, which the SC declared void in 2017.
- In addition to the provisions under this act, which entitles women subjected to **triple talaq to claim subsistence allowance** from their husbands, Muslim women can also seek **maintenance under Section 125 of the CrPC.**

Case Background:

- The **SC** dismissed a petition filed by **Mohd Abdul Samad**, who challenged the **Telangana High Court's** decision to uphold a family court's maintenance order.
- **Petitioner's Argument:**
 - Samad argued that a divorced Muslim woman is not entitled to maintenance under **Section 125 of the CrPC** and should instead seek relief under the **Muslim Women (Protection of Rights on Divorce) Act, 1986.**
 - In his appeal, he argued that his wife should seek maintenance exclusively under the **Muslim Women (Protection of Rights on Divorce) Act, 1986**, rather than Section 125 of the CrPC.
 - He claimed that the 1986 Act, being a special law, **superseded the CrPC provision**, rendering a divorced Muslim woman's application for maintenance under Section 125 invalid.

SC Ruling:

- The **secular statutory provision of Section 125 of the CrPC** cannot be overridden by the personal law remedy provided by the 1986 Act.
- **Muslim Women (Protection of Rights on Divorce) Act, 1986:**
 - **Section 3 of the 1986 Act** requires a man to provide “**reasonable and fair provision of maintenance**” to his **divorced Muslim wife** only during the **Iddat period**. After this period, his obligation under personal law ceases.
 - In contrast, **Section 125 of CrPC mandates monthly maintenance** for a divorced wife, regardless of her faith. Any divorced wife who has not remarried is entitled to maintenance by her ex-husband, who has sufficient means but has neglected or refused to maintain her.
- **Maintenance for Children**
 - Additionally, the **1986 Act** obliges a Muslim man to pay maintenance for his **children for only two years** from their birth dates, while **Section 125** requires support **until the children reach adulthood**.
- **No Upper Limit of Maintenance**
 - **Section 125** does not set an upper limit for maintenance, making it a **more beneficial provision** compared to the 1986 law.
- **Fundamental Right**
 - **Excluding Section 125 for divorced Muslim women would violate Article 15(1) of the Indian Constitution, which prohibits discrimination based on religion, race, caste, sex, or place of birth.**
 - **Section 125** reflects the **constitutional commitment** to ensuring a **dignified life for women of all faiths**.
- **Harmonizing the Laws**
 - **Section 125 of CrPC** and the **1986 Act** are not in conflict. The 1986 Act does not negate a divorced Muslim woman’s right to seek maintenance under Section 125.
 - It leaves the **choice to the woman to apply for maintenance** under either law. If a Muslim woman cannot support herself, she may seek maintenance under Section 125.
 - If she can manage financially, she may seek maintenance under the 1986 Act until the iddat period expires. Courts must interpret **both laws harmoniously and purposefully**.
 - **Parliament never barred divorced Muslim women** from claiming maintenance under Section 125, forcing them to seek relief only under the 1986 Act. Therefore, a divorced Muslim woman approaching the Magistrate under Section 125 cannot be directed to seek relief solely under the 1986 Act.

PEPPER IT WITH:
 Muslim Women (Protection of Rights on Divorce) Act, New civil and criminal laws

Role of J&K Lieutenant Governor Extended

News Excerpt:

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The Union Ministry of Home Affairs (MHA) has significantly expanded the administrative authority of the Lieutenant Governor (LG) of Jammu and Kashmir (J&K) through amendments to the Transaction of Business Rules.

Establishment of LG in J&K:

- On August 5, 2019, the Indian government revoked the special status of J&K under Article 370 of the Constitution.
- This move bifurcated the former state into two Union Territories: Jammu and Kashmir and Ladakh.
- **J&K retained its assembly, and the position of LG was established as an Administrator.**
- The **original rules for administration in the Union Territory of J&K, as specified by the MHA on August 28, 2019, delineated the functions of the LG and the Council of Ministers.**
- The **recent amendments** further refine and expand these roles, **reinforcing the LG's central position in the administrative hierarchy of J&K.**

Provisions of amendment:

- The **MHA** has notified the amended rules under Section 55 of the Jammu and Kashmir Reorganisation Act, 2019.
- **The new sections explicitly define the expanded role of the LG, particularly in matters that traditionally required the Finance Department's concurrence.**
- The notification specifies that **no proposal related to police, public order, All India Services (AIS), and the Anti-Corruption Bureau should be approved or rejected without the LG's discretion.**
 - This process **must be channelled through the Chief Secretary.**
- Furthermore, **the Department of Law, Justice, and Parliamentary Affairs is now required to submit proposals for the appointment of the Advocate-General and other Law Officers for the LG's approval, again routed through the Chief Secretary and the Chief Minister.**
- Any proposals **related to the grant or refusal of prosecution sanctions or the filing of appeals** must be presented to the LG by the Department of Law, Justice, and Parliamentary Affairs through the Chief Secretary.

Administrative Impact:

- **This change enhances the LG's involvement in key areas such as police, public order, All India Services (AIS), and their transfers and postings, all of which now require the LG's prior concurrence through the Finance Department.**
- The amendments **also extend the LG's oversight to matters connected with Prisons, the Directorate of Prosecution, and the Forensic Science Laboratory.**

- o This move **consolidates administrative control** and ensures that significant decisions within these domains have the LG's direct involvement.

Current political setup in J&K:

- Since June 2018, J&K has been under Central rule, with the government promising to restore statehood following assembly elections.
- o A Constitutional Bench of the **Supreme Court has mandated the Election Commission to conduct these elections before September 30, 2024.**

Way Forward:

The MHA's recent amendments to the Jammu and Kashmir Reorganisation Act reflect a **strategic enhancement of the Lieutenant Governor's administrative powers.** This move will streamline governance and ensure that critical decisions are subject to thorough oversight by the LG. As Jammu and Kashmir prepares for its assembly elections, these changes underscore the evolving governance framework in the region.

PEPPER IT WITH:
 LG of J&K, All India Services, Anti-Corruption Bureau

Bailment

News Excerpt:

The Supreme Court has affirmed that an accused's right to bail cannot be denied as a form of punishment, regardless of the crime's severity.

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More about the News: A Bench of two Judges **emphasized that refusal to grant bail unjustly punishes the accused, leading to their "prisonization," despite their innocence until proven guilty.**

- The court stated that if the state, prosecution agencies, or courts are unable to ensure an accused's right to a speedy trial, they should not oppose bail based on the crime's seriousness.
 - o **Article 21** of the Constitution, which guarantees the right to a speedy trial, applies regardless of the crime's nature.
- This order stemmed from an appeal by **Javed Gulam Nabi Shaikh against the Bombay High Court's denial of his bail in a case under the Unlawful Activities (Prevention) Act, 1967 (UAPA).**
 - o The Supreme Court **rejected the National Investigation Agency's (NIA) request to adjourn the matter and granted Shaikh his liberty.**

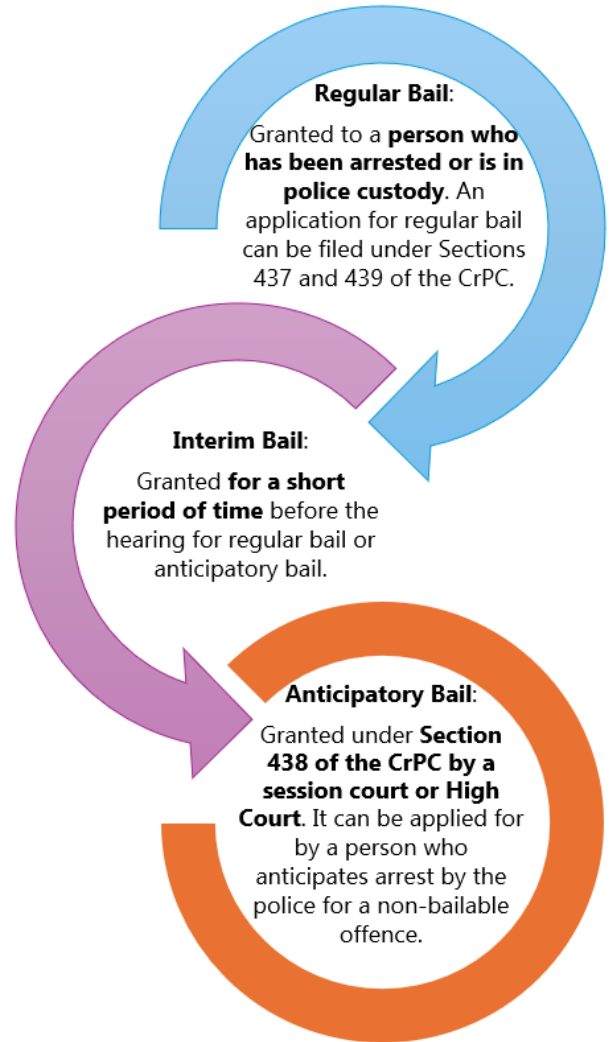
What Is Bail?

The term 'bail' originates from the Old French verb 'bailer,' meaning 'to give' or 'to deliver.' **Bail refers to the provisional release of an accused person in a criminal case before the court has announced its judgment.** It

involves depositing a security deposit to ensure the accused's release from custody.

Types of Bail in India

Depending upon the sage of the criminal matter, there are commonly **three types of bail in India:**



Conditions For Grant of Bail In Bailable Offences

Section 436 of the Code of Criminal Procedure, 1973, lays down that a person accused of a bailable offence under IPC can be granted bail under the following circumstances:

- There are **sufficient reasons to believe that the accused has not committed the offence.**
- There is **sufficient reason to conduct further enquiry into the matter.**
- The person is **not accused of any offence punishable by death, life imprisonment, or imprisonment for up to 10 years.**

Conditions For Grant of Bail In Non-Bailable Offenses

Section 437 of the Code of Criminal Procedure, 1973 lays down that the accused does not have the right to apply for bail in non-bailable offences. It is the discretion of the court to grant bail in case of non-bailable offences.

- If the accused is a **woman or a child, bail can be granted for a non-bailable offence.**

- **If there is a lack of evidence**, then bail for non-bailable offences can be granted.
- If there is a **delay in lodging an FIR by the complainant**, bail may be granted.
- If the **accused is gravely sick**.

Cancellation of Bail

- The court has the power to cancel the bail even at a later stage.
- This power is laid upon the court under sections 437(5) and 439(2) of the CrPC.
- **The court can cancel the bail granted by it and give directions to the police officer to arrest the person and keep them in police custody.**

Bail Provisions in Bharatiya Nagrik Suraksha Sanhita (BNSS)

- The Bharatiya Nagrik Suraksha Sanhita (BNSS) has introduced **substantive changes to the bail provisions, differing significantly from the existing Code of Criminal Procedure (Cr.P.C.)**.
- **While many provisions in BNSS remain identical to those in Cr.P.C.**, notable changes include the introduction of definitions for bail, bail bond, and bond, along with **modifications to the maximum period of detention for undertrial prisoners and anticipatory bail provisions**.
- The BNSS has provided **clear definitions for terms that were previously undefined in the Cr.P.C.:**
 - **Bail:** "Bail means the **release of a person accused of or suspected of the commission of an offence from the custody of law upon certain conditions imposed by an officer or Court** on execution by such person of a bond or a bail bond."
 - **Bail Bond:** "Bail bond means an undertaking for **release with surety**."
 - **Bond:** "Bond means a personal bond or an undertaking for **release without surety**."
- **Changes for Undertrial Prisoners:**
 - **Early Release of First-Time Offenders:** Previously, there was no provision for the early release of first-time offenders. **BNSS Allows early release if a first-time offender has spent one-third of the maximum prescribed sentence in detention.**
 - **Multiple Pending Cases:** Earlier, there was **no provision denying bail if multiple cases are pending. Under BNSS, there is a provision to deny Bail if the accused has pending investigations, inquiries, or trials in more than one case.**
 - **Superintendent of Jail's Report:** BNSS mandates the Superintendent of Jail **to submit a written application for the release of undertrial prisoners who have completed one-third or one-half of the prescribed sentence.**
- **Changes in Regular Bail Provisions**

- **Police Custody Beyond Fifteen Days:** Earlier accused could not be denied bail solely because they might be needed for witness identification.
 - **BNSS adds that bail cannot be denied if the accused is needed for police custody beyond the first fifteen days.** The Court can decide on the condition of such bail.

Changes in Anticipatory Bail Provisions

- **Broader Restriction on Anticipatory Bail:**
 - **Previously** Anticipatory bail was **disallowed for individuals accused of gang rape on women under sixteen years; BNSS** has extended this **restriction to women under eighteen years** in such cases.

Way Forward:

The Supreme Court order **reinforces that bail should not be used as punishment, emphasizing the right to a speedy trial.** The Bharatiya

Nagarik Suraksha Sanhita (BNSS) introduces key reforms, including clearer definitions, early release for first-time offenders, and new conditions for bail in multiple cases. These changes aim to ensure fair treatment of the accused and a more efficient criminal justice system.

PEPPER IT WITH:
 Bharatiya Nagrik
 Suraksha Sanhita
 (BNSS), Bail Provisions

Rules for civil servants: Indian Administrative Service (Probation) Rules, 1954/ All India Services (Conduct) Rules, 1968

News Excerpt:

IAS probationer Puja Khedkar is under investigation by the **Department of Personnel and Training (DoPT)**.

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More about the news:

- The conduct of civil servants is primarily regulated by the **All India Services (AIS) (Conduct) Rules, 1968, and the IAS (Probation) Rules, 1954**. These rules outline the standards and expectations regarding the behaviour and performance of officers serving in the Indian Administrative Service.

Background:

- The Centre established a single-member committee under the **Department of Personnel and Training (DoPT)** to review all documents submitted by probationary IAS officer Puja Khedkar for her civil services candidacy.
- Khedkar achieved a rank of 821 in the 2022 UPSC Civil Services Examination and was appointed to the Indian Administrative Service (IAS) under the Other Backward Classes (OBC) and Physically Handicapped (PH) quotas.
- Concerns have been raised regarding her appointment under these categories. Additionally, Khedkar is facing **multiple allegations of misconduct, including seeking unauthorized privileges not appropriate for a**

probationer, allegedly occupying the District Collector's office's antechamber, and using an unauthorized red-blue beacon on her private Audi sedan, which she claims was received as a gift.

Rules on 'integrity' of services:

- The **AIS (Conduct) Rules govern all officers of the IAS, IPS, and Indian Forest Service** from the time they are allocated to their respective services and commence training.
- According to **AIS (Conduct) Rule 3(1)**, every member of the service is required to **maintain absolute integrity and dedication to duty at all times**, refraining from any conduct unbecoming of a member of the service.
- **Rule 4(1)** further specifies that **officers must not misuse their position** or influence to secure employment for their family members in private enterprises or NGOs.
- In **2014, additional sub-rules were introduced** emphasizing the need for officers to uphold **high ethical standards, integrity, honesty, political neutrality, accountability, transparency, responsiveness to the public, courtesy, and respectful behaviour**.
- The rules also mandate that officers make decisions solely in the public interest, disclose any private interests related to their public duties, **avoid financial or other obligations that may influence their decisions**, refrain from **misusing their position for personal gain**, and avoid decisions that could benefit themselves, their families, or friends financially or materially.
- Under **Rule 11(1)**, **officers are permitted to accept gifts from close relatives or personal friends with whom they have no official dealings** on occasions like weddings, anniversaries, funerals, and religious functions. However, **any gift exceeding Rs 25,000 in value must be reported to the government**, with this threshold last updated in 2015.

Rules for probationers:

- During their **probation period, which extends for at least two years** after selection into the services, officers are governed by specific rules. This period includes their **training at the Lal Bahadur Shastri National Academy of Administration (LBSNAA) in Mussoorie**. At the end of this probationary period, officers undergo an examination, and upon passing it, they are confirmed in their respective services.
- **Probationers receive a fixed salary and travel allowance but do not have automatic entitlement to several benefits granted to confirmed IAS officers**. These include official perks such as an official car with a VIP number plate, official accommodation, an assigned chamber with support staff, and a constable.
- **Rule 12 outlines conditions under which probationers may be discharged**. These conditions include findings by the central government that the probationer is ineligible for recruitment or unsuitable for membership in the

service, willful neglect of probationary studies or duties, or lacking the necessary qualities of mind and character required for the service.

- **The Centre conducts a summary inquiry before making decisions under these rules**, similar to the ongoing inquiry initiated against Khedkar by the DoPT. The committee responsible for this inquiry is expected to submit its report within two weeks.

Furnishing false information:

- **Since the batch of 1995**, 27% of seats in the services have been reserved for the OBC category. The reservation for **Physically Handicapped (PH)** candidates was introduced in 2006, allocating 3% of seats in each category (General, OBC, SC, and ST) for differently-abled individuals.
- Despite her low rank, Puja Khedkar was allotted the **prestigious IAS through these quotas based on her OBC and PH certificates**. However, if it is proven that these certificates were falsified, Khedkar could face dismissal from service. Probationers are "**discharged**," while confirmed officers are "**dismissed**."
- According to a **1993 circular from the Department of Personnel and Training (DoPT)**, **any government servant found to have provided false information or produced a false certificate to secure an appointment should not be retained in service**. This rule applies even if the individual has already been confirmed and is not a probationer.
- However, such a dismissal is likely to be contested in court, including appeals to the **Central Administrative Tribunal (CAT) and the National OBC Commission**, processes that could extend over several years. Meanwhile, the officer may remain in service during this period.
- Previously, Puja Khedkar was involved in a **legal dispute** at the **CAT** regarding her **PH status**. According to a CAT order dated February 23, 2023, the UPSC had directed Khedkar to undergo a **medical examination at AIIMS, New Delhi**, in April 2022, but she requested a postponement due to a COVID-19 infection.
- Despite the rescheduling, Khedkar did not attend the examination, although she later submitted an **MRI report from a private facility to support her claims**. The CAT order noted that AIIMS officials were **unable to assess her visual disability percentage due to her non-response** to their attempts to contact her.
- Critics have questioned Khedkar's OBC (non-creamy layer) status, citing her seemingly affluent background. **The OBC category distinguishes between creamy and non-creamy layers**, with only the latter eligible for reservations in government services and institutions. This determination is based on criteria such as **parents' income and occupational background**.

For those with parents in the private sector, eligibility for **non-creamy layer status requires an annual income below Rs 8 lakh**. In contrast, income is not considered for those with parents in the public sector. According to DoPT rules, individuals are classified as a creamy layer if either parent becomes a Group-A official before the age of 40 or both are Group-B officials with similar ranks. Puja Khedkar's father, Dilip, is a **retired officer from the Maharashtra Pollution Control Board** who is currently involved in politics.

PEPPER IT WITH:
CAT, All India Services (AIS) (Conduct) Rules, 1968

Should education be brought back to the State list?

News Excerpt:

Recent paper leak incidents like NEET-UG and CSIR NET have once again brought back the discussion of putting the subject of Education under the state list.

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Historical Context:

- During British rule, the **Government of India Act of 1935** introduced a federal structure, distributing legislative subjects between the federal legislature (now the Union) and provinces (now States).
- **Education, being a significant public good, was originally placed under the provincial list.**
- **This arrangement continued post-independence, with education remaining under the State list as per the distribution of powers.**
- During the Emergency period, the Congress party established the Swaran Singh Committee to recommend constitutional amendments.
- One key recommendation was **to place 'education' in the concurrent list to enable the formulation of nationwide education policies.**
- This recommendation was implemented through the **42nd Constitutional Amendment in 1976**, moving education from the State list to the concurrent list.
 - This **shift occurred without extensive debate and was ratified by various States.**
- After the Emergency, the Janata Party government, led by Morarji Desai, passed the **44th Constitutional Amendment in 1978** to reverse several controversial changes made by the **42nd Amendment**.
 - However, **the proposal to return 'education' to the State list was passed in the Lok Sabha but not in the Rajya Sabha; since then, education has been part of the concurrent list.**

International Practices:

United States	<ul style="list-style-type: none"> • State and local governments set educational standards, mandate standardized tests, and supervise colleges and universities. • The federal education department primarily handles policies for financial aid, addresses key educational issues, and ensures equal access.
Canada	<ul style="list-style-type: none"> • Education is completely managed by the provinces.
Germany	<ul style="list-style-type: none"> • The Constitution grants legislative powers for education to the Länder (equivalent to States).
South Africa	<ul style="list-style-type: none"> • Education is governed by two national departments: school and higher education. • The provinces have their own education departments to implement national policies and address local issues.

Arguments for including in State List:

- The primary argument for keeping education in the concurrent list is **to ensure a uniform education policy, enhance standards, and foster synergy between the Centre and States.**
 - However, given India's vast diversity, a **'one size fits all' approach may not be practical or desirable.**
- According to the Ministry of Education's 2022 report on the 'Analysis of Budgeted Expenditure on Education,' **States bear the lion's share of education expenditure, with 85% of the revenue expenditure coming from the States and only 15% from the Centre.**
- Even when considering all other departmental expenditures on education and training, **the States still contribute 76% compared to the Centre's 24%.**
- The recent controversies surrounding the NEET-UG exam, including allegations of paper leaks and other irregularities, **highlight that centralization does not necessarily eliminate corruption and inefficiency.**
 - Therefore, **there is a growing need for autonomy, allowing States to develop tailored policies for syllabus, testing, and admissions, particularly for higher education and professional courses like medicine and engineering.**

Way Forward:

- A productive discussion on **moving 'education' back to the State list is necessary, given the States' significant role in funding education.**
 - **This move would enable States to address local needs more effectively.**
- **Central institutions like the National Medical Commission, University Grants Commission, and All India Council for Technical Education could continue to regulate higher education.**

PEPPER IT WITH:
Swaran Singh Committee, 42 & 44 CAs

Parliamentary Committees

News Excerpt:

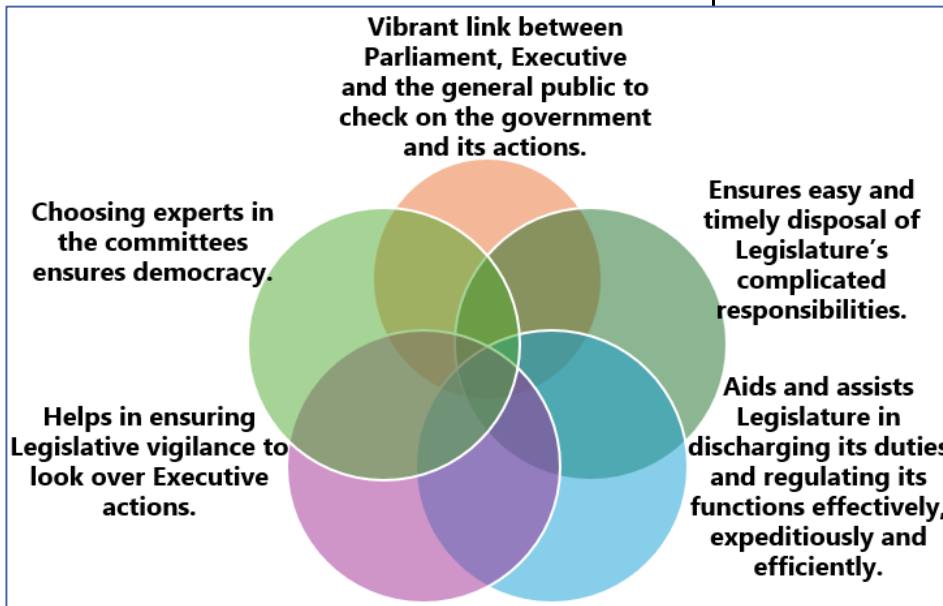
The process to reconstitute Parliamentary panels was set rolling with the Parliamentary Affairs Minister moving **two motions to set up the Public Accounts and Estimates committees.**

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What are Parliamentary Committees?

- < A parliamentary Committee is a committee that is appointed or elected by the House or nominated by the Speaker, works under the direction of the Speaker, and presents its report to the House or to the Speaker and the Secretariat.
- < These are of two kinds-**Standing Committees and Ad-hoc Committees.** The former are permanent i.e. constituted every year or periodically and work on a continuous basis, while the latter are temporary and cease to exist on completion of the task assigned to them.

Significance of the Parliamentary Committees:



Challenges associated with the committees:

- **Weakening of Parliamentary Oversight:** In a parliamentary democracy, the principle of checks and balances is pivotal. Parliamentary committees are instrumental in scrutinizing legislation, ensuring transparency, and holding the government accountable. **Bypassing** these committees undermines their oversight role, **potentially weakening democratic processes.**
- **Emphasis on Brute Majority:** The Indian legislative framework allows discretion to the Chair (Speaker in Lok Sabha, Chairperson in Rajya Sabha) on whether bills should be referred to committees. This discretion becomes problematic in a scenario where the ruling party holds a significant majority. It risks **sidelining**

meaningful debate and scrutiny, concentrating power disproportionately.

Way Forward:

- **Mandatory Committee Review:** Drawing from practices in countries like Sweden, Finland, and Australia, where bills routinely undergo committee scrutiny, India should consider mandating the referral of all bills to appropriate parliamentary committees. This practice enhances **thorough examination and ensures comprehensive deliberation** involving diverse perspectives, including from opposition members.
- **Rule Amendment:** To enforce mandatory committee referral, amendments to parliamentary rules of procedure are essential. This would institutionalize robust scrutiny and contribute to informed decision-making on legislative matters.
- **Periodic Committee Evaluation:** As recommended by

PEPPER IT WITH:
Public Accounts and Estimates committees, NCRWC

the National Commission to Review the Working of the Constitution (NCRWC), the effectiveness of parliamentary committees should be periodically assessed. **Outdated committees should be replaced with new ones that address contemporary challenges and legislative needs.** For instance, specialized committees could focus on critical areas, such as the national economy or constitutional amendments, equipped with necessary resources for expert analysis and research.

Standing committees are classified into six broad categories:

- < Financial Committees
- < Departmental Standing Committees
- < Committees to Enquire
- < Committees to Scrutinise and Control
- < Committees Relating to the Day-to-Day Business of the House
- < House-Keeping Committees or Service Committees

SOCIAL ISSUES

Kallakurichi hooch tragedy

News Excerpt:

The Kallakurichi hooch tragedy in Tamil Nadu has resulted in 39 deaths and numerous hospitalizations due to the consumption of spurious liquor.

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Understanding Hooch: Production, Dangers & Impact:

Hooch

The term is **derived from the native Alaskan tribe Hoochinoo, referring to poor-quality, homemade alcohol**

Unlike branded liquors produced in factories with stringent quality controls, **hooch is often made in crude settings, making it potentially dangerous.**

It is essentially alcohol intended for intoxication. However, if not prepared correctly, it can be lethal.

How is Hooch Produced?

Health Effects of Methanol Poisoning

Central Nervous System (CNS)

- Methanol primarily affects the CNS, causing symptoms like headache, dizziness, nausea, and confusion.
- Severe exposure can lead to seizures, coma, and death.

Vision Problems

- One of the most dangerous effects of methanol poisoning is its impact on vision.
- It can cause blurred vision, visual field defects, and even permanent blindness. This occurs because methanol metabolites damage the optic nerve.

Metabolic Acidosis

- Methanol metabolism leads to the accumulation of formic acid, which can cause severe metabolic acidosis.
- This disrupts body's acid-base balance, leading to organ failure and death if untreated.

- Hooch is produced by distilling a fermented mixture, usually of locally available yeast and sugar or fruit (often fruit waste).** All alcohol is made through two fundamental processes: **fermentation and distillation.**
- Fermentation:** When heated, yeast reacts with sugar (from grains, fruits, sugarcane, etc.) **to produce an alcohol-containing mixture. This ancient process is used to create beverages like beer or wine.**
- Distillation:** This process **separates alcohol from a fermented mixture using evaporation and condensation.** Different components of the mixture have distinct boiling points. By heating the mixture to the correct temperature, alcohol can be isolated from water and other substances.
 - Distilled beverages, or spirits, are much stronger than fermented ones.

Why is Methanol Dangerous in Illicit Liquor?

- Methanol is not intended for human consumption. It is used industrially as a solvent, antifreeze, and fuel.
- When ingested, methanol is **metabolized in the liver to formaldehyde and formic acid**, which are highly toxic compounds.

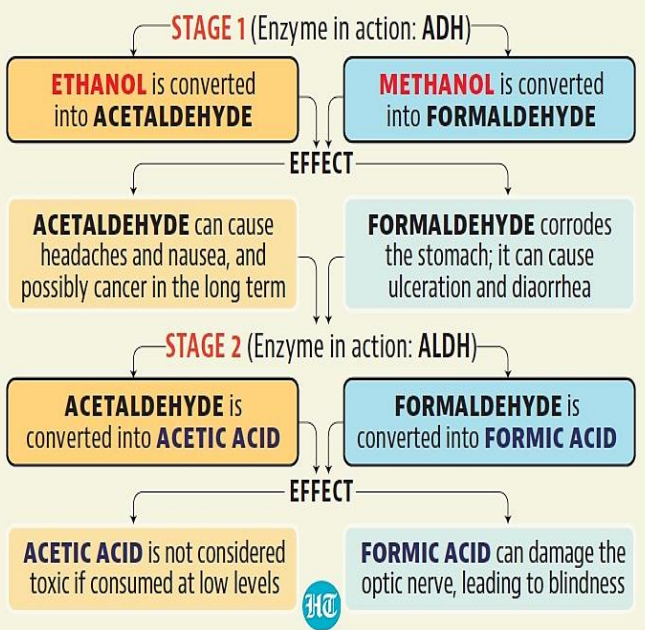
Treatment for Hooch Poisoning:

- Intravenous **injections of ethanol and fomepizole** are the recommended treatment for hooch poisoning.
- However, fomepizole is not always available and can be costly in many areas of India. In such cases, physicians administer a **1:1 ratio of ethanol to water.**
- Ethanol aids in the body's natural elimination of methanol**, preventing its conversion into toxins through dialysis or natural metabolic processes.

PEPPER IT WITH:
Methanol, Ethanol, Alcohols, Fermentation Process, Enzymes

How a body responds to alcohol

The body metabolises alcohol in a two-step process. For ethanol, a harmful product at step 1 is removed in step 2; for methanol, products at both stages are highly toxic.



Way Forward:

- ◁ The government should **regulate alcohol production and not rely on complete prohibition**, as it would only drive the illegal liquor trade further underground and put more lives at risk.
- ◁ Since liquor revenue is substantial, efforts should be made to **ensure that safe and quality-controlled liquor vends are increased** so that there are fewer areas that can be used by illegal sellers. This is not to suggest that alcohol consumption should be encouraged but to **ensure that only legal and controlled alcohol is in the market.**
- ◁ There should be a **national alcohol policy** as prescribed by WHO for much more aggressive awareness campaigns on the problems of liquor abuse along the lines of tobacco.

World Drug Report – 2024

News Excerpt:

The United Nations Office on Drugs and Crime (UNODC) unveiled its World Drug Report for 2024 during a special Commission on Narcotic Drugs (CND) session.

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United Nations Office on Drugs and Crime (UNODC):

- The United Nations Office on Drugs and Crime is a United Nations office that was established in **1997**.
- It was established as the **Office for Drug Control and Crime Prevention** by combining the **United Nations International Drug Control Program (UNDCP)** and the **Crime Prevention and Criminal Justice Division in the United Nations**.
- The agency's focus is the **trafficking and abuse of illicit drugs, crime prevention and criminal justice, international terrorism, and political corruption.**
- **UNODC** has its headquarters in **Vienna, Austria**.

More about the News:

- This event coincided with the International Day against Drug Abuse and Illicit Trafficking (World Drug Day), emphasizing the theme "The evidence is clear: invest in prevention."

Key highlights of the Report:

- The impacts of the **global drug problem** are escalating due to the rise of new **synthetic opioids** and unprecedented supply and demand for various drugs.
- **Drug production and trafficking** are worsening **instability and inequality**, causing significant **harm to health, safety, and well-being**.
- **Cannabis** remains the most commonly used drug (228 million users), followed by **opioids** (60 million users), **amphetamines** (30 million users), **cocaine** (23 million users), and **ecstasy** (20 million users).
- **Nitazenes**, a group of **synthetic opioids** more potent than **fentanyl**, have recently surfaced in several high-income countries, leading to more overdose deaths.

- **Women** are particularly **underserved**, with only one in 18 women with drug use disorders in treatment compared to one in seven men.

Drug Trafficking and Organized Crime:

- In the **Golden Triangle**, drug traffickers are branching into other illegal economies, such as **wildlife trafficking, financial fraud, and illegal resource extraction**.
- These activities harm **displaced, poor, and migrant communities**, who may resort to **opium farming or illegal resource extraction** to survive, often falling into debt with crime groups or turning to drug use.
- These illicit activities also cause **environmental degradation** through **deforestation, toxic waste dumping, and chemical contamination**.

Impact of Cannabis Legalization:

- As of January 2024, **Canada, Uruguay, and 27 jurisdictions in the United States** have **legalized cannabis for non-medical use**, with various legislative approaches emerging globally.
- **In the Americas**, legalization has accelerated harmful cannabis use and **diversified cannabis products**, many with high THC content.
- Hospitalizations related to **cannabis use disorders** and the proportion of people with **psychiatric disorders** and attempted suicide associated with regular cannabis use have risen in **Canada** and the **United States**, especially among young adults.

Opium Ban in Afghanistan:

- **Afghanistan's opium production** drastically **decreased by 95%** from 2022 to 2023, while **production in Myanmar increased by 36%**, leading to a **74% drop in global opium production** in 2023.

Way Forward:

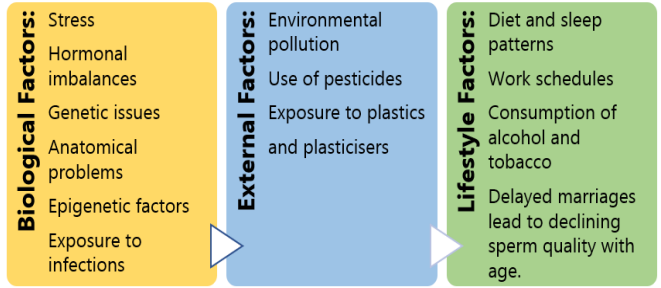
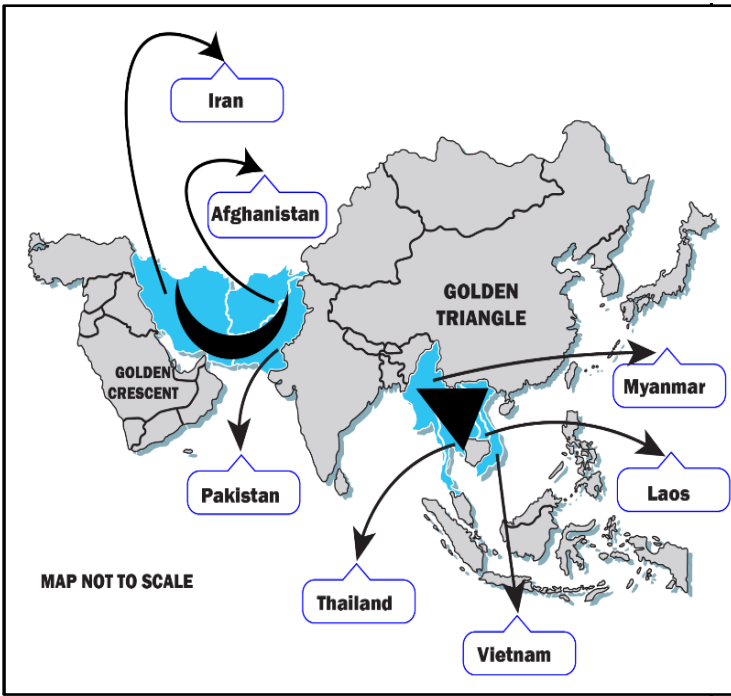
- The report underscores that the **right to health** is an **internationally recognized human right** that applies to everyone, **including drug users**, regardless of their legal status. This right extends to their children, families, and communities.
- To solve this problem, we must provide **evidence-based treatment and assistance to people** affected by drug use, **target the illicit drug market**, and make considerable **investments in prevention**.

PEPPER IT WITH:
Cannabis, NDPS Act, National Fund for Control of Drug Abuse, National Action Plan for Drug Demand Reduction

The Golden Triangle

- The Golden Triangle is a region where the **jungles of Thailand, Laos, and Myanmar converge**.
- It has long been infamous as a **hub for the illegal drug trade**.

This illicit industry is managed, controlled, and safeguarded by **military leaders** who operate like warlords in alliance with regional organized crime figures.



Lifestyle Interventions:

- **Education and Awareness:** Awareness about reproductive health should start from secondary school and junior college, with parents, particularly fathers, playing a key role.
- **Healthy Habits:** Young men should adopt healthy eating and regular sleep patterns and avoid alcohol, tobacco, and other intoxicants.
- **Limiting Device Use:** Reducing excessive use of mobile phones and laptops, particularly near the body.
- **Stress Management:** Daily exercise, yoga, and meditation to manage stress.
- **Couples' Health:** Both partners should adopt healthy lifestyles to improve their reproductive health.

Medical Treatments:

- **Semen Analysis:** A routine semen analysis after 2-7 days of sexual abstinence is recommended by WHO to diagnose the issue.
- **Surgical Interventions:** For physical or anatomical issues such as blocked sperm flow or undescended testicles.
- **IntraCyttoplasmic Sperm Injection (ICSI):** For cases with absence of sperm.
- **Donor Sperm Insemination or Adoption:** Alternative options for couples facing severe male infertility.
 - In cases where the sperm count is very low, there is a chance for the couple to conceive naturally if sperm motility is very good.
- **Intrauterine Insemination (IUI), In Vitro Fertilisation (IVF), or ICSI:** For cases with low sperm count and motility.
- **Genetic Counseling:** It is important for infertility due to gene mutations before opting for assisted reproductive technologies (ART).

Way Forward:

It is time to recognize and address the significant issue of male reproductive health. Awareness building, sex education, and timely medical interventions are key to supporting couples on their journey to parenthood. By breaking the taboo surrounding male infertility and fostering a more informed and supportive environment, we can help many couples realize their dream of having children.

PEPPER IT WITH:
ART, IVF, WHO, ICMR guidelines

Breaking the taboo around men's reproductive health

News Excerpt:

As we grapple with the multifaceted challenges of global population dynamics, it is crucial to turn the spotlight on a subject often overshadowed in discussions on reproductive health: male infertility.

- Male infertility remains a stigmatized issue, shrouded in silence and with misconceptions.
- This neglect exacerbates the emotional and psychological toll on those affected and impedes progress towards effective solutions.

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Global and National Infertility Statistics:

- **Global Infertility:** In 2004, the World Health Organization (WHO) estimated that globally, between 60 million to 80 million couples struggle with infertility.
- **Infertility in India:** The exact figures are unspecified by the Indian Council of Medical Research (ICMR). It is estimated that 13 to 19 million Indian couples may face infertility issues as per WHO's data, with the incidence likely to increase due to factors such as environmental pollution and lifestyle changes.
- Male infertility accounts for 50% of all infertility cases in the country.

Causes of Male Infertility:

Male infertility can manifest in different ways, such as the absence of sperm, low sperm count, or low sperm motility. The **causes include:**

Solutions and Interventions

ECONOMY

Rare Current Account Surplus

News Excerpt:

India's Current account saw a rare net surplus of \$5.7 billion in the first quarter of 2024.

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More details about the news:

- This surplus means more money entered the country than left, helping to limit the deficit for 2023-24 to \$23 billion, or 0.7% of GDP.
- Excluding the first pandemic year, this deficit is the lowest in seven years and the second-lowest in two decades.

Reason of Current Account Surplus:

- The Reserve Bank of India noted an increase in investments driven by higher government spending and a booming housing sector.
- Rating company Crisil recently estimated investments at 33.7% of GDP in 2023-24, a 1.5 percentage point increase, implying a 33% savings rate for a 0.7% current account deficit (CAD).
- A rising savings rate allows for greater investments while keeping the current account deficit stable.
- Thus, a deficit resulting from strong savings and investments can still promote growth.

Demographic Profile:

- India's demographic profile is theoretically ideal for a high savings rate.
- An increasing share of the working-age population should boost production, income, and savings, while a declining fertility rate should lead to more women in the workforce.

Rising Investment Demand:

- Therefore, the current growth rate in savings is unlikely to meet the investment scale needed for strong economic expansion, resulting in a CAD.
- Drawing on overseas savings will be essential to benefit from the demographic dividend.

Foreign Exchange Inflows:

- India's markets are well-positioned to receive foreign exchange inflows.
- As one of the world's fastest-growing economies, post-election investments that were on hold are likely to resume. If the US starts cutting rates before the year-end as anticipated, there could be a re-routing of global capital towards emerging markets, including India.

Current Account Deficit: Good or Bad?

- A CAD at this time could balance expected capital inflows and stabilize the rupee.
- A current account surplus isn't always good, nor is a deficit always bad. What matters is the quality and sustainability of the deficit or surplus.
- A deficit driven by investments in projects with sustainable future benefits is good.
- A surplus from unused savings due to a lack of domestic investment opportunities is bad.
- In India's case, a deficit caused by high gold imports is bad, as would be a surplus driven only by remittance inflows.
- A current account deficit is not always detrimental, and a surplus is not always beneficial.
- Developing economies like India often run a current account deficit due to the need to import capital goods to boost production capacity.

One way to evaluate the current account is by looking at the difference between domestic savings and investments.

If a country saves more than it invests, it has a surplus; if it invests more than it saves, it has a deficit.

India's significant investment needs cannot be fully met by the collective savings of its households, businesses, and government. Therefore, it typically runs a deficit of 1-3% of GDP.

Fig: Domestic Savings and Investments

- This demographic dividend increases labour strength and productivity.
- However, India's savings rate hasn't grown sufficiently in recent years due to issues like inadequate job creation, poor labour skills, and economic setbacks from demonetization and the pandemic.

- A trade deficit can also indicate strong domestic demand.

Global Scenario:

- Half of the top 20 emerging markets have persistent CADs.
- The surplus countries are either oil-rich (Russia, Iran), export-oriented (China, Thailand, Korea) or rising export stars (Vietnam).

Challenges:

- The rupee has been one of the best-performing currencies this year in both nominal and real terms.

- However, geopolitical tensions and rising protectionism could cause even a moderate appreciation of the rupee to make India's exports more expensive and less competitive.

Way Forward:

The key takeaway is that instead of labelling a deficit as good or bad, **India needs to build long-term export potential** while creating an **institutional environment** that efficiently attracts and uses foreign capital to fund moderate deficits in the short term.

PEPPER IT WITH:
BoP, Indian Demographic Dividend, Foreign Exchange

Financial Inclusion Index

News Excerpt:

The **Financial Inclusion Index (FI-Index)** rose to **64.2 in March 2024**, up from **60.1 in March 2023**, according to the **Reserve Bank of India (RBI)**.

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More about the news:

- The **annual FI-Index** for **March 2021** was **53.9**, compared to **43.4 in March 2017**.
- The Index is published **annually every July**.
- This improvement reflects **growth in all sub-indices**, showcasing the cumulative efforts of various stakeholders over the years.
- The **recent improvement** in the Index is primarily attributed to the **Usage dimension**, indicating a deepening of financial inclusion.

About the Financial Inclusion Index:

- This Index measures the **extent of financial inclusion** across India.
- The FI-Index condenses information on various aspects of **financial inclusion** into a single value ranging **from 0 to 100**, where **0 represents complete financial exclusion** and **100 represents full financial inclusion**.
- The FI-Index consists of **three main parameters**:
 - Access (35% weight),
 - Usage (45% weight)
 - Quality (20% weight)
- Each is composed of various dimensions calculated from a **total of 97 indicators**.
- It is sensitive to factors like **ease of access, availability and usage of services**, and the **quality of those services**.
- The Index is built **without a base year**, making it a comprehensive measure of ongoing efforts toward financial inclusion.
- Conceptualized as a **comprehensive tool**, the **FI-Index incorporates** data from **banking, investments,**

insurance, postal services, and the pension sector, developed in consultation with the **government** and **sectoral regulators**.

Steps to Enhance Financial Inclusion

- In 2020, the **Reserve Bank of India (RBI)** released the **National Strategy for Financial Inclusion 2019-2024**.
- **Financial inclusion** has a significant **multiplier effect**, boosting overall **economic output**, **reducing poverty** and **income inequality**, and promoting **gender equality** and **women’s empowerment**.
- RBI identified **six strategic objectives** for the national strategy on financial inclusion:
 - Universal access to financial services,
 - Providing a basic suite of financial services,
 - Access to livelihood and skill development,
 - Financial literacy and education,

<p>Access (35% weight)</p>	<ul style="list-style-type: none"> • The ‘Access’ sub-index is further divided into four dimensions, viz., ‘Banking’, ‘Digital’, ‘Pension’, and ‘Insurance’, which reflects the efforts made on the supply side of financial inclusion, such as availability of physical and digital infrastructure and measures for making basic products and services available for the excluded segments. • The 26 indicators across four dimensions have been selected to capture the number of banking outlets, total number of savings accounts, all types of cards and electronic payment infrastructure, subscription base of various pension schemes and offices, etc.
<p>Usage (45% weight)</p>	<ul style="list-style-type: none"> • The ‘Usage’ sub-index is divided into five dimensions, viz., ‘Savings & Investment’, ‘Credit’, ‘Digital’, ‘Insurance’ and ‘Pension’. • Comprising 52 indicators, it is more of a demand-side measure and reflects the extent of active usage of financial infrastructure by way of savings, investment, insurance, availing of credit and remittance facilities, etc.
<p>Quality (20% weight)</p>	<ul style="list-style-type: none"> • The ‘Quality’ sub-index has three dimensions, viz., ‘Financial Literacy’, ‘Consumer Protection’, and ‘Inequality’ in the distribution of financial infrastructure with 19 indicators. • These indicators capture the efforts undertaken by the stakeholders to make citizens aware of the appropriate financial services available, safe ways of using them and making them aware of their rights, such as overcoming psychological barriers. They also reflect the effectiveness of the grievance redress mechanism and account for the uneven distribution of certain indicators of financial access and usage.

- Customer protection and grievance redressal, and
- Effective coordination.

Way Forward:

- To achieve **universal access to financial services**, the RBI noted that while initiatives like **PM Jan Dhan Yojana** have established the **necessary banking infrastructure**, further efforts are needed to improve access to **insurance and pension services**.
- For **financial literacy** and **education**, the RBI proposed **developing specific modules** for various **target audiences** (such as children, entrepreneurs, and senior citizens) through the **National Centre for Financial Inclusion**.
- Additionally, it suggested expanding centres for financial literacy to **every block in the country** by **March 2024**.

PEPPER IT WITH:
National Strategy for Financial Inclusion 2019-2024, PM Jan Dhan Yojana

AI Preparedness Index

News Excerpt:

The **International Monetary Fund (IMF)** launched an **Artificial Intelligence Preparedness Index (AIPI) Dashboard**, evaluating 174 economies worldwide for their AI readiness.

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About Intelligence Preparedness Index:

- The Index assesses countries based on **Digital infrastructure, Human capital, Labor policies, Innovation & Economic Integration, and Regulation and Ethics**.
- The AIPI categorizes countries into **Advanced Economies (AE), Emerging Market Economies (EM), and Low-Income Countries (LIC)**.
- **India is categorized as an EM with a 0.49 rating. India ranks 72 in a total of 174 countries**, with Bangladesh (0.38) on 113, Sri Lanka (0.43) on 92, and China (0.63) on 31.
- **Singapore (0.80), Denmark (0.78), and the United States (0.77) are among the highest-rated AEs.**

AI's Impact on the Global Economy:

- IMF research indicates that AI is set to reshape the global economy, potentially **endangering 33% of jobs in advanced economies, 24% in emerging economies, and 18% in low-income countries**.
- Despite these risks, AI also holds **immense potential to enhance job productivity, create new roles, and establish new industries**.

Disparities in AI Adoption:

- **Emerging market economies and low-income countries** typically have fewer high-skilled jobs than advanced economies, suggesting they **may experience fewer immediate disruptions from AI**.

- However, these countries often lack the necessary infrastructure and skilled workforce to fully benefit from AI, **potentially exacerbating global inequality**.
- The IMF's analysis highlights that wealthier economies are generally better equipped for AI adoption compared to low-income countries.
- The varied stages of AI readiness across **countries highlight the need for tailored policies to manage risks and maximize benefits**.

Artificial Intelligence (AI):
It refers to the simulation of human intelligence in machines that are programmed to think and learn like humans.

These intelligent systems can perform tasks that typically require human intelligence, such as recognizing speech, making decisions, understanding natural language, and identifying patterns.

Some common Applications of AI include:

Healthcare: AI algorithms can analyze medical data, such as imaging and patient history, to assist doctors in diagnosing diseases and recommending treatments. AI accelerates the process of discovering new drugs by predicting how different compounds will interact with targets in the body.

Finance: AI systems analyze transaction patterns to identify and prevent fraudulent activities. Models can predict market trends and execute trades at optimal times for maximum profit.

Customer Service: AI-powered chatbots provide instant responses to customer inquiries, improving customer service efficiency and availability. Virtual assistants like Siri and Alexa help users manage tasks, answer questions, and control smart home devices.

Transportation: AI enables self-driving cars to navigate and make decisions on the road, aiming to reduce accidents and improve traffic flow. AI systems optimize traffic signals and manage congestion in urban areas.

Retail: E-commerce platforms use AI to suggest products based on user behaviour and preferences. Inventory Management: AI predicts demand and optimizes stock levels, reducing waste and improving efficiency.

Manufacturing: AI monitors equipment to predict failures and schedule maintenance, minimizing downtime. AI systems inspect products for defects, ensuring high quality in production lines.

Education: AI tailors' educational content to individual students' learning styles and paces. AI helps automate administrative tasks such as grading and scheduling.

Agriculture: AI analyzes data from sensors and drones to optimize planting, watering, and harvesting. AI identifies pest infestations early, allowing for timely and targeted interventions in Precision Farming.

Addressing Inequality:

- Policymakers are urged to take proactive measures to mitigate the inequality.
- The AIPI Dashboard aims to provide valuable insights for policymakers, researchers, and the public to assess AI preparedness and formulate policies that ensure AI advancements benefit all sectors of society.

PEPPER IT WITH:
Global Inequality,
social safety nets,
equitable AI
adoption

REPORTS

Financial Stability Report

News Excerpt:

The Reserve Bank of India published its 29th issue of the Financial Stability Report (FSR) in June 2024.

More details about the news

- It is a **half-yearly publication**, with contributions from all financial sector regulators.
- It presents the **collective assessment** of the Sub Committee of the Financial Stability and Development Council on current and emerging risks to the stability of the Indian financial system.

Key Highlights:

- The **global economy** is encountering heightened risks due to prolonged **geopolitical tensions, high public debt, and slow progress in reducing inflation**.
- Despite these challenges, the **global financial system** has remained resilient, maintaining **stable financial conditions**.
- The **Indian economy** and financial system continue to be **robust and resilient**, underpinned by **macroeconomic and financial stability**.
- **Improved balance sheets** have enabled **banks and financial institutions** to support economic activity through **sustained credit expansion**.
- As of the **end of March 2024**, **scheduled commercial banks (SCBs)** had a **capital-to-risk-weighted assets ratio (CRAR)** of **16.8%** and a **common equity tier 1 (CET1)** ratio of **13.9%**.
- **SCBs' gross non-performing assets (GNPA)** ratio fell to a multi-year low of **2.8%**, with the **net non-performing assets (NNPA)** ratio at **0.6%** as of the end of March 2024.
- **Macro stress tests** for **credit risk** indicate that **SCBs** would meet **minimum capital requirements**, with the system-level CRAR projected at **16.1%, 14.4%, and 13.0% in March 2025** under **baseline, Medium, and severe stress scenarios, respectively**.
- These scenarios are **conservative assessments** under **hypothetical shocks** and should not be interpreted as forecasts.
- **Non-banking financial companies (NBFCs)** remain healthy, with a **CRAR of 26.6%**, a **GNPA ratio of 4.0%**,

and a **return on assets (ROA)** of **3.3%** at the end of March 2024.

Capital to Risk-Weighted Assets Ratio (CRAR)

- The **CRAR**, commonly referred to as the **capital adequacy ratio (CAR)**, is a crucial financial metric for investors and analysts.
- This ratio **assesses a bank's financial stability** by comparing its **available capital** to its **risk-weighted credit exposure**, expressed as a percentage.
- **CAR = (Tier 1 Capital + Tier 2 Capital) / Risk Weighted Assets**

Non-Performing Asset (NPA)

- **NPA** is a loan or advance for which the **principal or interest payment** remained **overdue for a period of 90 days**.

Gross Non-Performing Assets (GNPA)

- It provides the overall value of the **bank's gross non-performing assets** over a given time period.

Net Non-Performing Assets (NNPA)

- The net NPA is calculated by **subtracting the bank's provisions** from the **gross NPA**.
- Therefore, after the bank has made certain provisions, net NPA provides the **precise value of non-performing assets**.

ASUSE Report

News Excerpt:

The Ministry of Statistics and Programme Implementation (MoSPI) released the latest **Annual Survey of Unincorporated Enterprises (ASUSE)** report for 2022-23.

Key Highlights of the Survey:

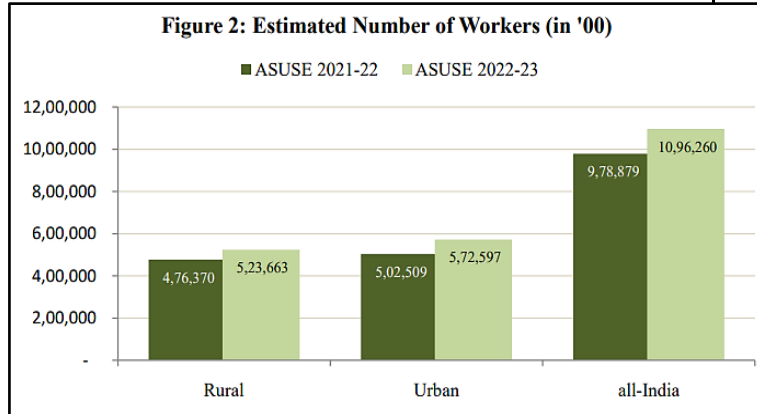
- **Uttar Pradesh, West Bengal, and Maharashtra** had the **highest share of informal sector enterprises** in both rural and urban areas for 2022-23.
- Notably, the **share of informal sector enterprises** declined in several states post-pandemic, including **Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Tamil Nadu, and West Bengal**.
- State-wise data indicates that **Uttarakhand, Assam, Chhattisgarh, Delhi, and Jammu & Kashmir** had the **lowest share** of informal sector enterprises.
- However, **Delhi saw a significant increase**, with its share rising to **1.43% in 2022-23** from 0.64% in 2021-22.

Employment Generation

- In 2022-23, over **10.96 crore workers were employed** in the unincorporated non-agricultural sector, including working owners, hired workers, unpaid family members, and others.
- Of these, **5.72 crore were from urban areas**, and **5.24 crore were from rural areas**. Comparatively, 9.79 crore workers were employed in 2021-22, with 5.03 crore from urban areas and 4.76 crore from rural areas.

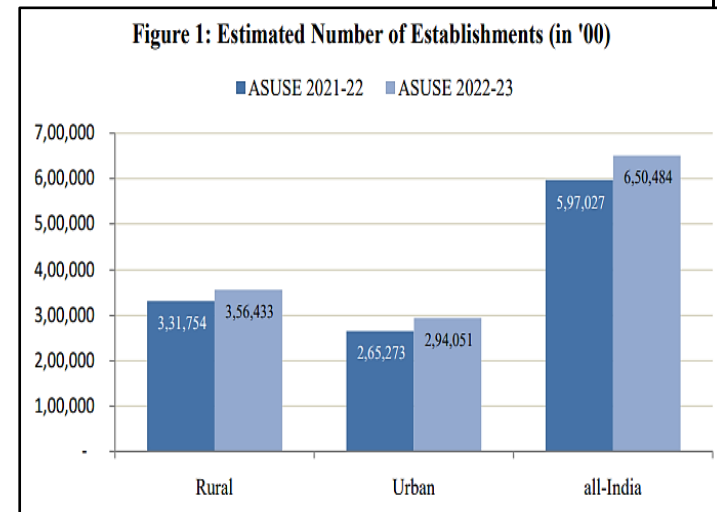
Significance of The Sector

- The unincorporated non-agricultural sector is crucial to the Indian economy, significantly **contributing to employment, Gross Domestic Product**, and the overall **socio-economic environment**.
- This sector supports the incorporated sector by acting as **suppliers and service providers**, forming an integral part of the **domestic value chain**.



Resilient Growth of the Sector:

- The results highlight the resilience of the unincorporated sector following the **COVID-19 pandemic**.
- The **total number of establishments** in the sector **increased** from 5.97 crore in 2021-22 to **6.50 crore in 2022-23**, representing a 5.88% annual growth.



- During this period, the **Gross Value Added (GVA)**, a key indicator of economic performance, saw an **annual growth of 9.83%**.
- **Major contributors** to this GVA growth were the **manufacturing** and other services sectors, with **manufacturing GVA increasing by 19.14% annually** and **other services GVA growing by 18.90%**.

Expanding Labour Market

- The unincorporated non-agricultural sector **employed about 11 crore workers** from October 2022 to September 2023, up from 9.8 crore in 2021-22, showing a healthy labour market growth of 7.84% annually.

- The **other services sector** saw the **maximum annual growth in employment (13.42%)**, followed by the **manufacturing sector (6.34%)**.
- The survey shows that the **average annual earnings for informal workers** rose to **Rs. 1,10,982 in 2022-23** from Rs. 1,06,381 in 2021-22, reflecting **improved wage conditions** in the informal sector.

Improved Productivity:

- **Gross Value Added (GVA) per worker**, a measure of labour productivity, rose to **Rs. 1,41,769 in 2022-23** from Rs. 1,38,207 in 2021-22.
- During the same period, the **Gross Value of Output (GVO) per establishment** increased from Rs. 3,98,304 to **Rs. 4,63,389**, indicating increased productivity with more efficient use of resources, including labour, which is critical for sustained economic growth and competitiveness.

Asia-Pacific Employment and Social Outlook Report 2024

News Excerpt:

The **International Labor Organization (ILO)** has released the annual **Asia-Pacific Employment and Social Outlook 2024**.

About the report:

- This is the **fifth edition** of the report.
- It pulls together the **most recent statistics to depict the state of the labour market** and its impact on the 3.4 billion people living in the **Asia-Pacific** region.
- The **2024 report** examines the **implications of population ageing for labour markets and society**.

Key Findings of the report:

- **Stable Labor Market Amid Subdued Growth:** Employment in Asia and the Pacific is projected to grow at its long-term average rate, with **unemployment remaining nearly unchanged**.
- **Gender Inequality in Employment:** Women's employment rates are significantly lower than men's, particularly among youth, where **young women are almost three times more likely to be NEET (not in employment, education, or training)**.
- **Low Overall Unemployment, High Youth Unemployment:** The region's **unemployment rate is low (4.2% in 2023)** as compared to the **global unemployment rate**, but youth unemployment remains high at 13.9%.
- **Need for Stronger Labor Market Performance:** Widespread decent work deficits persist, with slow progress in reducing informality and working poverty.
- **Unequal Productivity Growth:** From 2004 to 2021, productivity growth led to increased labour income, but this **growth was uneven across countries. Most workers remain far from the labour income levels of high-income countries.**

- **Declining Productivity and Income Growth:** Over the past decade, **growth rates for labour productivity and income have declined.** Enhancing productivity requires revitalizing structural transformation and investing in physical and human capital and technological progress.
- **Insufficient Decent Work Opportunities:** The **lack of job opportunities** that meet decent work criteria **threatens social justice and the labour market outlook in the region.**

Labour force participation in the region:

- **The region's labour force participation rate (LFPR) fell from 67.0 per cent in 1991 to 60.9 per cent in 2023** and is projected to decline further over the coming years.
- Increased educational attainment and ageing populations are among the main drivers of declining LFPR. However, the **absolute employment levels have been steadily growing, reaching 2 billion in 2023.**
- LFPR in South Asia is 54%, 63 % in the Pacific and 66 % in East and South-East Asia. **South Asia's low aggregate LFPR is largely due to a significant gender gap: 77% for men and 31% for women.**

Challenges highlighted by the report:

- **Ageing population:** The region's population is projected to age as much over the next 27 years as the populations in high-income countries worldwide have aged over the past 60.
- **Rise in dependency ratio:** The economic dependency ratio, defined as the ratio of those not employed to those employed among the region's working-age population

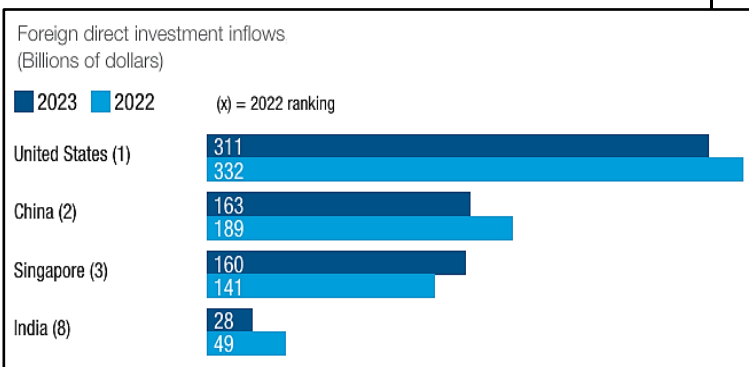
(aged 15 years and above), is projected to **rise** from 0.72 in 2023 to 0.90 in 2050.

Policy implication for Promoting Full and Productive Employment and Decent Work suggested in the report:

- **Remove Employment Barriers:** Address job gaps and gender disparities by easing unpaid care burdens and enhancing access for women and disadvantaged groups.
- **Support Disadvantaged Groups:** Implement programs for young people, older workers, and persons with disabilities to improve their employment prospects and social justice.
- **Facilitate Migration:** Manage migration to benefit both origin and destination countries, leveraging migrants' typically higher employment rates.
- **Enhance Labor Productivity:** Invest in technology and skills to boost productivity and support structural transformation, which is essential for economic growth and higher labour incomes.

International Labor Organization (ILO)

- It was created in 1919 as part of the **Treaty of Versailles.**
- **AIM:** To promote social justice and internationally recognized human and labour rights, pursuing its founding mission that social justice is essential to universal and lasting peace.
- **India is a founding member of the International Labor Organization.**
- The General Assembly of the ILO **meets every year** in June.
- **Headquarters:** Geneva, Switzerland



World Investment Report 2024

News Excerpt:

UN Trade and Development (UNCTAD) released the **World Investment Report** for 2024.

Key points of the Report:

- **Global foreign direct investment (FDI) decreased by 2% to \$1.3 trillion in 2023** due to an **economic slowdown** and rising **geopolitical tensions.**
- **However, excluding large investment flow fluctuations in certain European conduit economies, the decline surpasses 10%.**

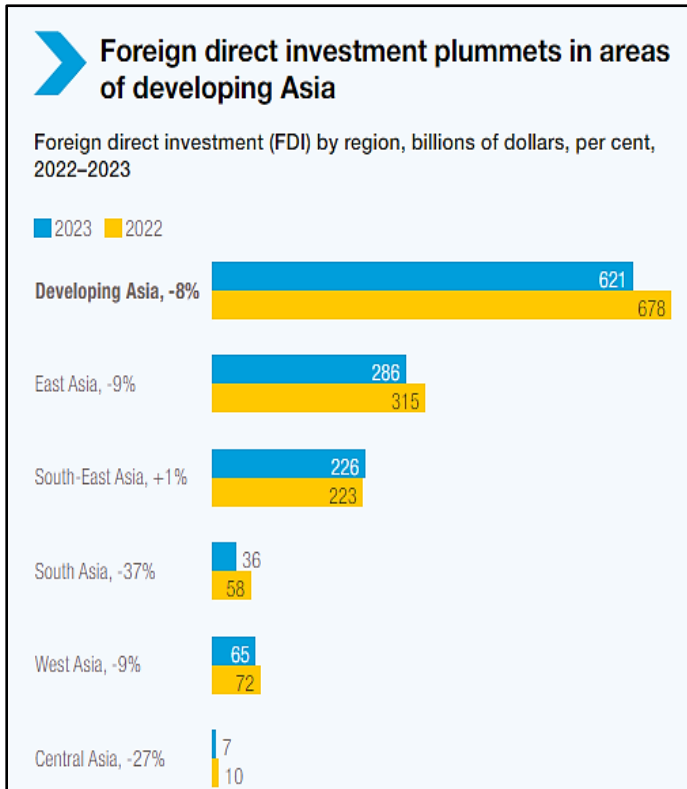
FDI Trend in India

- **India fell seven spots** in the global foreign direct investment (FDI) ranking to **15 as inflows declined 43% to \$28 billion in 2023.** The country saw FDI inflows worth **\$49 billion in 2022.**
- **Net foreign direct investment (FDI)** in India, which is the difference between inflows

	LFPR Total (aged 15+)	LFPR Youth (aged 15-24)	LFPR Women (aged 25-64)	LFPR Men (aged 25-64)	Population aged 65+ as share of ages 15+
Asia and the Pacific	-5.7	-19.3	0.6	-2.3	5.6
East Asia	-9.9	-23.5	-0.5	-6.9	9.8
South-East Asia	-2.6	-14.5	1.5	-2.0	4.0
South Asia	0.8	-10.7	9.4	2.6	2.5
Pacific	-0.6	-8.7	9.4	-4.7	4.3

Source: ILOSTAT, ILO modelled estimates, November 2023.

and outflows, **plummeted by 62.14% to \$10.6 billion** in the financial year ending March 31, 2024 (FY24), from \$28 billion the previous year, according to Reserve Bank of India (RBI).



o This marks the **lowest level of net FDI since 2007**, largely **due to increased repatriation of capital**.

Regional Trends

- **Developing Countries:** FDI to developing countries **fell by 7% to \$867 billion**.
- **Africa:** FDI **fell by 3% to \$53 billion**, but there were some significant new projects, like a **green hydrogen project in Mauritania**.
- **Asia:** Investment **dropped by 8% to \$621 billion**, with significant declines in China, India, and West and Central Asia, while South-East Asia remained stable.
- **Infrastructure investment:** Tight financing conditions led to a **26% fall in international project finance deals**, critical for infrastructure investment.
- **China:** China is the **world's second-largest FDI recipient**, experiencing an **unusual drop**.
- **India:** **Sizeable declines** were recorded in **India** and in **West and Central Asia**.

Reasons for Declining FDI Trend

- **Crises, protectionist policies, and regional realignments** are disrupting the global economy, fragmenting trade networks, regulatory environments, and global supply chains.
- This **fragmentation undermines the stability and predictability** of global investment flows, creating both obstacles and isolated opportunities.

Future Prospects

- Despite the challenges, **modest growth in FDI for 2024** is possible due to **easing financial conditions** and efforts to **facilitate investment**.
- Some sectors, like **automotive and electronics manufacturing**, are seeing growth, especially in regions with good market access.
- However, many **developing countries struggle to attract investment** and join global production networks.

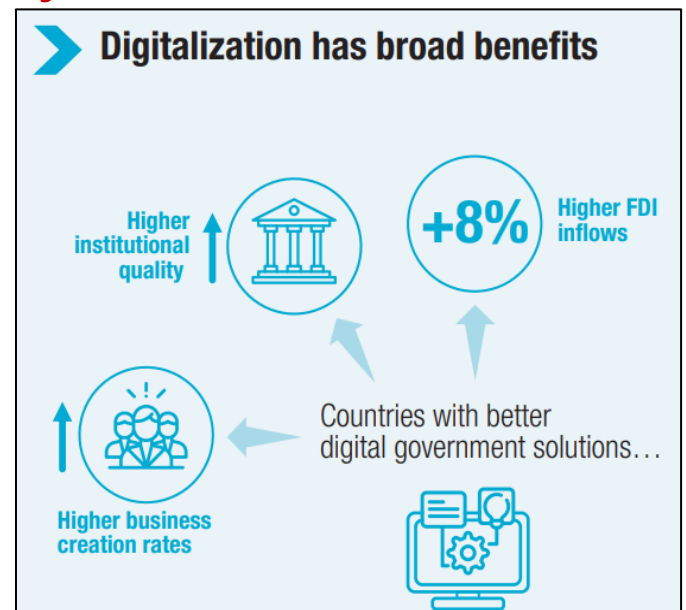
Impact on Sustainable Development Goals

- The decrease in project finance **negatively impacted sustainable development**, with new funding for Sustainable Development Goals (SDGs) sectors dropping by over 10%, especially in agrifood and water.
- **Agrifood systems** and **water and sanitation** had **fewer projects** in 2023 than in 2015.
- **Tight financing conditions** in 2023 led to a **26% drop in international project finance**, which is crucial for **infrastructure** in areas like **power** and **renewable energy**.
- **Sustainable bonds showed slight growth** in 2023, while investment in sustainable funds **fell by 60%**.
- Concerns about **greenwashing** (misleading sustainability claims) are making investors cautious.
- **Policy actions are needed** to prevent a backlash against sustainable investment strategies.

International Investment Agreements

- In 2023, **29 new international investment agreements** were made, fewer than half being traditional bilateral treaties.
- **Reforming older agreements is slow**, with about half of global FDI still governed by **unreformed treaties**, increasing **legal disputes**, especially in developing countries.

Digital Government



- The report advocates for a **bottom-up approach** to **digital government development**, starting with **basic business services** and **gradually expanding**.
- Since 2016, **online single windows** in **developing countries** have increased from 13 to 67, and in **developed countries** from 12 to 28.
- **Information portals** for **business and investor registration** also expanded significantly.

Farmers' willingness in the propagation of indigenous varieties.

Identifying the farmers with traditional knowledge of crop cultivation.

Encouraging the farmers with large landholdings to cultivate indigenous crops.

Awareness among the consumers and stakeholders about the ecological and health benefits of indigenous varieties.

Support of the government to the farmers for the propagation of these crops in small and large scale.

Development of mechanization suitable for processing indigenous crops.

Way Forward:

- The report suggests that **business facilitation and digital government solutions** can boost investment by creating a transparent and efficient environment.
- It suggests a **gradual approach to implementing digital government services**, starting with basic business services and expanding to more areas.
- **Investment facilitation** aims to simplify processes for investors through **better access to information, transparency,** and **streamlined administrative procedures.**

PEPPER IT WITH:
Sustainable Agriculture, Environmental stewardship, economic profitability

AGRICULTURE

Beej Utsav

News Excerpt:

A series of Beej Utsavs, or seed festivals, were held in the tribal belt at the tri-junction of Rajasthan, Madhya Pradesh, and Gujarat.

About Beej Utsavs:

- It is a unique initiative where practising farmers **exchange their knowledge** of Indigenous seed varieties.

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- The aims of the festival include the **conservation of indigenous seeds, farming systems, and enhancing crop diversity, to improve food and nutrition security.**
- The tribals were encouraged to protect their **rich heritage of biodiversity** through farm practices handed down through several generations.

Benefits of Indigenous seed varieties:

- **Less dependency on Hybrid seeds:**
 - Even marginalized farmers started depending upon hybrid seeds amidst the misconception that they give more yield than indigenous seeds, which affected their overall health and budget.
- **Environmentally sustainable:**
 - Indigenous seed varieties were "inherently compatible" with the local farming conditions, are pest-resistant and require very limited use of chemical pesticides.
- **Economically feasible:**
 - Because of the hybrid seeds, the expenditure on irrigation, fertilizers, and pesticides is constantly increasing and turning agriculture into a loss-making activity.
- **Better for health:**
 - The Food and Agriculture Organization (FAO) in its first ever report on the state of biodiversity has noted that loss of biodiversity in agriculture and excessive use of fertilizer for cultivation are the foremost reasons for malnutrition.
 - Local and endemic crops that have evolved over time are a rich source of nutrition. Rapid commercialization of agriculture has led to the cultivation of a few commercial crops at the expense of local crops, resulting in the virtual extinction of nutritional biodiversity.
- **Empowering women peasants:**
 - Earlier, in remote villages, women had the knowledge of conservation and storage of seeds and this empowered them at home as well as in the community.

Challenges in reviving Indigenous varieties:

The primary factors that contribute to the revival of indigenous crops include the **passion of farmers, administrative measures initiated by the stakeholders, and the marketing strategies of vendors.**

Way Forward:

- In remote villages, **the seed bank concept** needs to be encouraged and women peasants should be taught conservation, preservation and storage of seeds. It would help **in exchange of seeds, improve nutrients in soil** and have a positive impact on agricultural biodiversity.
- **Ecological farming practices** need to be strengthened, and if farmers follow proper procedures in selecting indigenous seeds and practice organic farming, it will

increase productivity and have a positive impact on soil health, biodiversity and human health.

- Additionally, knowledge about the health benefits of indigenous crops may **prevent their extinction** and ensure the availability of these foods in local markets.
- **The concept of Seed festivals** should also be rightly promoted.

Makhana Cultivation in Bihar

News Excerpt:

Foxnuts, popularly known as 'makhana,' have gained traction as a 'super snack,' with their prices **skyrocketing** in both domestic and international markets **since 2019**.

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Soaring Price of Makhana

- Makhana prices have soared in the **international wholesale market**, reaching around **8,000 per kg**, up from ₹1,000 a decade ago.
- **In India, wholesale prices** have increased from ₹250 per kg to **1,400**.
- However, farmers in **Bihar's Mithila region**, which is the main producer of this crop in India, receive only a **fraction of the revenue** from this **healthy food** despite the **labour-intensive process** involved.



Production of Makhana

- The **Indian Council of Agricultural Research (ICAR)** reports that **Bihar** produces 10,000 tonnes of makhana annually, about **90% of India's total**. India meets **80% of the global demand** for foxnuts.
- Senior scientists at **ICAR** highlight makhana's nutritional benefits, including its **protein content** and **flavonoids** that protect against **diabetes and obesity**.

Prickly Water Lily

- Also known as the **Gorgon Plant**, it is a **floating plant** characterized by its **large, round, and deeply veined leaves**, which can reach **4 to 5 feet** in diameter.
- These **flat, "quilted" leaves** are covered in thorns on both the surface and the **royal purple** underside.
- The plant's **day-blooming, cup-shaped flowers** usually open underwater but occasionally emerge above the surface.
- These flowers are **deep violet** with an outer row of **white petals**. **Sharp spines** cover the sepals, stems, and both sides of the leaves.



- The **prickly water lily**, from which makhana seeds are harvested, covers over 15,000 hectares in Bihar.

Cultivation Process

- The cultivation process, which involves **sowing in December-January, transplantation in February-March**, and **harvesting in July-October**, is **labour-intensive**.
- The **seeds** are collected from **pond bottoms, graded, dried, roasted, and shelled** by women in the community.

Government Incentive

- The **Bihar government** offers a **75% subsidy** on the **Suvarna Vaidehi variety** of seeds under the **Makhana Development Scheme**.
- Additionally, makhana is part of the Union government's **One District One Product scheme**, providing subsidies to food processors for branding, marketing, and infrastructure development.
- However, the **harvesters**, primarily **traditional boatmen and fisherfolk**, receive minimal government support and are advocating for a **minimum support price (MSP)** to sustain cultivation.

Role of Mallah Family

- About **500,000 families**, mainly from the **Mallah community**, are involved in its processing across **nine districts** in the **Mithila region**.
- Despite the **hard work** and **cultural significance**, the Mallahs face challenges such as **inadequate government support**.
- Many **migrate to Assam and Bengal** for better opportunities.
- The introduction of **popping machines** is feared to threaten the livelihoods of Mallah women.

Way Forward:

- Efforts are underway to **cultivate the lily in managed ponds** for better **hygiene** and **organic production**.
- The government needs to provide an **MSP to support small-scale traders and farmers**, ensuring the sustainability and growth of makhana cultivation in Bihar.

PEPPER IT WITH:
One District One Product scheme, ICAR, MSP support

Draft National Programme for Organic Production

News Excerpt:

The **Agricultural and Processed Food Products Export Development Authority (APEDA)** issued the **draft National Programme for Organic Production (NPOP) in 2024**.

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More About the News:

- **APEDA** stated that the policy has been revised **to align with international standards**.
- It also proposes **increased penalties** by **accredited certifying bodies** for violations and non-compliance with the norms.

Unique ID for Farmers

- The draft suggests introducing a **unique identification (ID)** for farmers interested in **organic farming**.
- Regarding the unique ID, the draft stipulates that **farmers must register** with the **Ministry of Agriculture and Farmers Welfare** to receive their **unique ID**.
- This ID can then be submitted to the **Internal Control System** of a grower group for registration **under NPOP**.

INDIA'S ESTIMATED HOUSEHOLD CEREAL CONSUMPTION VERSUS PRODUCTION					
Monthly per capita cereal consumption (in kg)					
	1999-2K	2004-05	2009-10	2011-12	2022-23
Rural	12.72	12.12	11.35	11.23	9.61
Urban	10.42	9.94	9.39	9.32	8.05
Weighted Average#	11.78	11.33	10.54	10.44	8.97
Population##	1050.01	1145.64	1232.08	1266.1	1422.03
Annual Consumption*	148.43	155.76	155.83	158.62	153.07
Annual Production*	196.38	185.23	203.45	242.2	303.63

#Weights based on number of sample households in consumption expenditure surveys; ##In million; *In million tonnes.

- The **draft NPOP** allows growers to **switch to another farmer group** if they face issues or prefer not to continue with their current group.

Penalties for Violation

- The proposed penalties include a fine of **10 lakh for providing false information**, up from ₹5 lakh, along with the **termination of accreditation**.
- **Non-compliance with NPOP norms** will incur a **fine of 50 lakh**, previously nil, and **failing to update and verify data** on Tracenet-Organic will result in a **25 lakh fine**, up from ₹3 lakh.
- For refusing to disclose information, the penalty is ₹5 lakh, while for non-conformities established for the

presence of residues in prohibited substances in a certified organic product, the fine is ₹25 lakh.

Way Forward:

- The trade analyst noted the **absence of organic textile standards** in the **draft NPOP**. The **National Accreditation Body (NAB)**, which operates under APEDA, has a comprehensive mandate and **should include these standards**.
- The expert stressed that **fraud in organic food** could impact human health and called for the NPOP to include **traceability from farm to fork, imprisonment clauses, and heavier fines** rather than merely pecuniary penalties.
- The expert highlighted that the presence of the APEDA Chairman in NAB is a **"conflict of interest"**.
- The most important missing aspect in the draft is the lack of a proposal to imprison the defaulters, as in countries like the US. These issues should be considered for better and nonpartisan implementation.

PEPPER IT WITH:
National Accreditation Board, Organic Production in India

Agricultural and Processed Food Products Export Development Authority (APEDA)

- **APEDA** was established by the Government of India through the **Agricultural and Processed Food Products Export Development Authority Act, 1985**.
- It was **created in 1986** and operates under the **Ministry of Commerce and Trade**.
- It was designed to **promote the export of agricultural goods and processed food products**.
- APEDA also acts as the **Secretariat** to the **National Accreditation Board (NAB)** for implementing the **accreditation of Certification Bodies** under the **National Programme for Organic Production (NPOP)** for **organic exports**.
- It is **headquartered in New Delhi** and has established **15 regional offices**.

INTERNATIONAL RELATIONS

22nd India-Russia Annual Summit

News Excerpt:

The **Prime Minister of India** visited the **Russian Federation** on **July 8-9, 2024**, for the **22nd India-Russia Annual Summit**.

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More about the News:

- During the visit, the Russian President awarded the Indian Prime Minister **Russia's highest civilian honour**, the **"Order of Saint Andrew the Apostle,"** for his significant contributions to fostering the **Special and Privileged Strategic Partnership** between India and Russia.
- It was **announced in 2019** (2 years after the Chinese President), but the ceremony occurred in 2024.

Political Relations

- The leaders acknowledged the continuous strengthening of the **Special and Privileged Strategic Partnership** based on trust, mutual understanding, and strategic alignment.
- Bilateral engagements**, including during **India's SCO and G20 Chairmanships in 2023** and **Russia's BRICS Chairmanship in 2024**, have deepened the partnership across various sectors.

Cooperation at the Level of Foreign Ministries

- They welcomed the **Protocol on Foreign Office Consultations (2024-28)** and regular consultations on **bilateral, UN-related, counter-terrorism, consular, and global issues**.

Parliamentary Cooperation

- Both sides highlighted the importance of **inter-parliamentary interactions**, emphasizing regular meetings of **Inter-Parliamentary Commissions** and **Parliamentary Friendship Groups**.
- They valued the visit of the **Speaker of the Russian Federation Council** to New Delhi for the 9th G20 Parliamentary Speakers' Summit in October 2023.

Cooperation Between National Security Councils

- The leaders emphasized **security dialogues** at the **National Security Advisors level**, enhancing strategic understanding and coordination on bilateral, regional, and global issues.

Trade and Economic Partnership

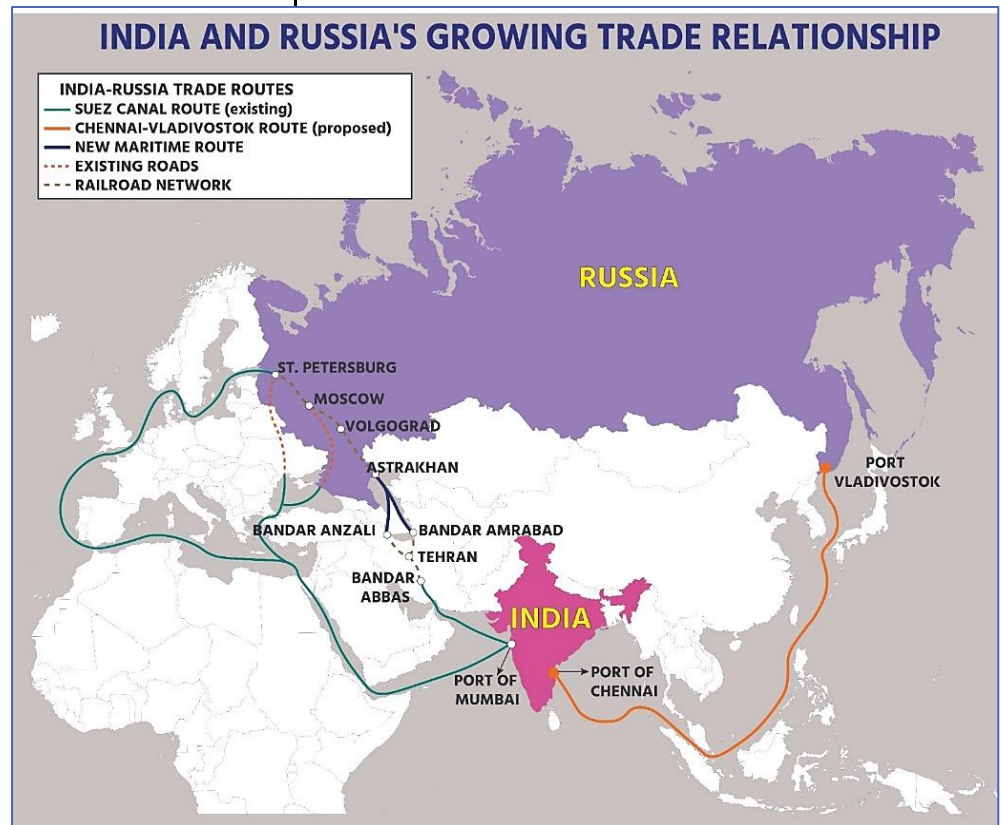
- They noted significant growth in **bilateral trade in 2023**, nearly **doubling the target of USD 30 billion** set for **2025**.
- The new target is to reach **USD 100 billion by 2030**.

Transport and Connectivity

- They agreed to develop stable transport corridors, focusing on projects like the **Chennai-Vladivostok Eastern Maritime Corridor** and the **International North-South Transport Corridor (INSTC)**.
- Cooperation will also promote **connectivity across Eurasia** and enhance shipping via the **Northern Sea Route**.

Civil Nuclear & Space Cooperation

- Highlighting **civil nuclear cooperation**, both sides noted progress at **Kudankulam** and discussed future projects.
- In **space cooperation**, they welcomed collaboration between **ISRO and ROSCOSMOS** in **satellite navigation, human spaceflight programs, and planetary exploration**.
- They plan to explore cooperation in **rocket engine development**.



Military Cooperation

- Military cooperation remains a cornerstone of the partnership, focusing on **joint research, development, and production of advanced defence technology**.
- They agreed to promote **joint manufacturing in India** under the **Make-in-India initiative**, including spare parts and components for Russian-origin defence equipment.

Name of MoUs/ Agreement	Objectives
Program of India-Russia cooperation in trade, economic, and investment spheres in the Russian Far East from 2024 to 2029 as well as of cooperation principles in the Arctic zone of the Russian Federation.	To facilitate further increase in trade and joint investment projects between the Far East Region of Russia and India.
MoU between the Ministry of Environment, Forest and Climate Change, India and the Ministry of Economic Development of the Russian Federation on the issues of Climate change and low-carbon development	Establish a Joint Working Group on the issues of climate change and low-carbon development. Exchange of information / best practices and co-hosting research to develop low-cost technologies.
MoU between Survey of India and the Federal Service for State Registration, Cadastre and Cartography, Russian Federation	Exchange of knowledge and experience in geodesy, cartography, and spatial data infrastructure; professional training and capacity building; cooperation between scientific and educational institutes.
MoU between the National Centre for Polar and Ocean Research, Ministry of Earth Sciences, Government of India, and the Arctic and Antarctic Research Institute on Cooperation in Research and Logistics in polar regions.	Cooperation in the study of polar environments and their variability by sharing resources and data; logistics in polar regions; joint research; exchanges of personnel; and participation in international programs and projects in the polar region.
MoU on Cooperation and Collaboration on Broadcasting between Prasar Bharati, India, and ANO "TV-Novosti" (Russia Today TV Channel), Russia.	Cooperation in the field of broadcasting , including exchange of programs, personnel, and training.
MoU between the Indian Pharmacopoeia Commission, Ministry of Health and Family Welfare, Government of the Republic of India, and Federal State Budgetary	To ensure the availability of high-quality medicines for human use through the exchange of information and capacity building.

Institution "Scientific Centre for Expert Evaluation of Medicinal Products" of the Ministry of Health of the Russian Federation.	
Cooperation Agreement between the Indian International Arbitration Centre and International Commercial Arbitration Court at the Chamber of Commerce and Industry of the Russian Federation	Facilitation of settlement of civil law disputes of a commercial nature.
Joint Investment Promotion Framework Agreement between Invest India and JSC "Management Company of Russian Direct Investment Fund"	Facilitate investment by Russian companies in the Indian market by promoting and fostering investment cooperation.
MoU between Trade Promotion Council of India and All Russia Public Organization "Business Russia"	Promotion of bilateral trade and investment , organizing B2B meetings, business promotion events; and exchange of business delegations.

Way Forward:

- < Maintain the momentum of the "**Special and Privileged Strategic Partnership**" by reinforcing institutional links and mechanisms for dialogue.
- < Regularly **convene high-level summits** and meetings to review progress and set new goals, with the next **annual summit scheduled in India in 2025.**
- < Achieve the **\$100 billion bilateral trade** target by 2030 through focused efforts and concrete action plans.
- < Execute the '**Programme-2030**' **action plan** to identify and develop new sectors of economic collaboration.
- < Improve **transport connectivity** via projects like the Chennai-Vladivostok Corridor, International North-South Corridor, and Northern Sea Route.
- < **Deepen collaboration in energy**, including oil, gas, and renewable energy sectors.
- < Increase **cultural cooperation** through festivals, exhibitions, and academic exchanges to promote mutual understanding.
- < Continue **working together in the UN** and other

PEPPER IT WITH:
 Programme-2030, Chennai-Vladivostok Eastern Maritime Corridor, International Solar Alliance

multilateral organizations to address global challenges and promote a multipolar world order.

India's G20 Task Force on Digital Public Infrastructure

News Excerpt:

The final 'Report of India's G20 Task Force on Digital Public Infrastructure' by 'India's G20 Task Force on Digital Public Infrastructure for Economic Transformation, Financial Inclusion and Development' was released in New Delhi.

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Digital Public Infrastructure (DPI):

It refers to a set of digital technologies, platforms, and systems that are developed and deployed to provide essential services to the public.

- DPI consists of **shared digital systems**, usually created through public-private partnerships, that form the underlying foundation for delivering services efficiently and at scale.
- **Key components:** Typically include **digital identity systems**, payment interfaces, data exchange platforms, and other foundational digital systems.
- **India's Outcomes From DPI:**
 - India has achieved **remarkable digital progress over the last decade by implementing DPI** - a unique approach to digital projects tailored to India's context.
 - This progress was made possible by India's world class digital public infrastructure for financial inclusion, including: UPI, AADHAAR, e-KYC etc.

About the Task Force:

- The task force is named '**India's G20 Task Force on Digital Public Infrastructure for Economic Transformation, Financial Inclusion and Development**'.
- The task force was established in **January 2023** to oversee and facilitate achieving **India's G20 Presidency agenda and priorities on Digital Public Infrastructure (DPI) and Financial Inclusion**.
- The Task Force looked at ways G20 member countries can boost productivity by adopting digital technology and DPI across sectors, as well as helping the government with digital economy policies and regulations.
- **Co-Chairs of the Task Force are:**
 - **Amitabh Kant** (G20 Sherpa of India)
 - **Nandan Nilekani** (Co-founder and Chairman of Infosys and Founding Chairman of UIDAI (Aadhaar))

Report of India's G20 Task Force on DPI:

The report is divided into three main parts:

- **Part 1:** Introduces the DPI Approach as a **transformative paradigm** for addressing global challenges through innovative technological solutions.
- **Part 2:** Examine India's DPI agenda during its 2023 G20 Presidency, **focusing on initiatives** within the Global

Partnership for Financial Inclusion (GPII) and Digital Economy Working Group (DEWG).

- **Part 3:** Presents a forward-looking strategy outlining a **strategic blueprint** for elevating DPI across various sectors, as well as on a global scale, through a range of its policy recommendations.

Key Highlights of the Report:

- The report emphasizes the **need to identify an existing global body** with a multinational **presence** to foster **DPI ecosystems**, particularly in **Global South** countries.
- It recognizes that **many countries are exploring ways** to develop national digital infrastructure to:
 - Accelerate economic progress
 - Drastically improve public services
 - Build trust between people and institutions
 - Enhance transparency
 - Reduce distance between citizens and services
- The report aims to **guide the future development and implementation of DPI approaches worldwide, with a particular focus on the Global South**.

Global Responsibility of India in DPI:

- India needs to identify an existing body to **harness the DPI ecosystem** across various regions and countries, especially in the Global South.
- This body should be **of global standard with multinational presence**, capable of working on policy dimensions, formulation, and implementation of strategies with appropriate technical and academic expertise.

Globalization of UPI:

- The **Reserve Bank of India is actively engaging** with various Indian Missions abroad to globalize UPI payment rails.
- The **National Payment Corporation of India's (NPCI)** international arm has reached out to over 80 countries for "UPI globalization" and has executed agreements with more than 20 payment partners covering over 30 countries.

AI Integration with DPI:

- The report suggests **integrating artificial intelligence (AI) with DPIs to amplify** their capabilities. However, it cautions that such integration should be done with guardrails of **ethical use of AI and data privacy**. The report proposes a DPI approach to AI growth, including:
 - Publication of open datasets via open API to train AI/ML models
 - Creation of reusable AI toolkits
 - Publication of open models to drive market innovation in AI

Innovation and Scalability:

- The report emphasizes that **open-source software**, AI models, standards, or content that are publicly available **can be replicated**, modified, and shared freely.

- This approach encourages **innovation and scalability** in DPI by promoting the entry of private players in the technology industry.

Way Forward:

- ◁ To maximize the effectiveness of DPI outreach efforts, a **comprehensive and phased approach** could be encouraged.
- ◁ **Identification of the countries** with interest and need in adopting the DPI, outlining a **customized sovereign DPI design** and architecture, arranging for funds and engaging systems integrators are necessary steps to address any country specific DPI requirements.
- ◁ India must **participate actively in global standards setting bodies** to shape global standards.

PEPPER IT WITH:
Open Network for Digital Commerce, e-Sanjeevani, Digital India BHASHINI

Colombo Security Conclave

News Excerpt:

The Colombo Security Conclave (CSC) officially welcomed **Bangladesh as its fifth member state.**

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Colombo Security Conclave (CSC):

- It is a regional security cooperation framework that originated in 2011 from trilateral meetings between the National Security Advisors (NSAs) and Deputy NSAs of **India, Maldives, and Sri Lanka.**
- The meetings were briefly **suspended between 2014 and 2020 due to tensions between India and Maldives.**
- In 2020, the framework was revived, rebranded, and renamed from the "NSA-level Trilateral Meeting" to the "**Colombo Security Conclave.**"
- A **secretariat** for the group was established in **Colombo** in 2021.
- The CSC **aims to address security concerns in the Indian Ocean Region (IOR) with a focus on maritime security, marine pollution response, and search and rescue (SAR) operations.**
- **Members: India, Maldives, Sri Lanka, Mauritius (2022) and Bangladesh (2024)**
- **Observer state: Seychelles**
- The **inclusion of Bangladesh** as a full member highlights the growing importance of regional security collaboration within the CSC framework.

Key Areas of Cooperation

Maritime Safety and Security:

- Access to **India's Long-Range Identification and Tracking (LRIT) Data Centre.**
- Use of the **Merchant Ship Information System (MSIS)** to exchange unclassified information on white shipping.
- **Enhanced Maritime Domain Awareness (MDA)** through training and cooperation in SAR operations.

- Strengthening of **Exclusive Economic Zone (EEZ) surveillance** and communication **channels to address illegal maritime activities.**
- **Exercises like 'DOSTI' and tsunami warning coordination.**

Countering Terrorism and Radicalization:

Intelligence sharing against terrorism, radicalization, extremism, illegal drugs, weapons, and human trafficking.

- **Combating Trafficking and Transnational Organized Crime:**

Collaboration on issues such as contraband smuggling, illegal unregulated and unreported (IUU) fishing, and irregular human migration (IHM).

- **Cyber Security and Protection of Critical Infrastructure:**

- Workshops and training programs to develop regional cybersecurity capabilities, including deep/dark web handling, digital forensics, and defensive operations.

- **Humanitarian Assistance and Disaster Relief (HADR):**

- Coordinated efforts to provide humanitarian aid and manage disaster relief operations in the region.

Significance of CSC:

- **Addressing Regional Security Challenges:** By focusing on maritime security, the CSC helps maintain stability in the IOR, which is vital for international trade and shipping.
- **Non-Traditional Security Threats:** The CSC addresses various non-traditional security threats, including piracy, contraband smuggling, IUU fishing, IHM, marine pollution, and climate change impacts.
- **Operational and Policy-Level Cooperation:** The CSC fosters cooperation at both the operational and policy-making levels, involving various government agencies and military coordination.
- **Enhanced Regional Collaboration:** The CSC's small grouping allows for easier agreement on security issues and provides a platform for island and littoral nations to tackle their maritime challenges effectively.
- The CSC's initiatives, such as **virtual workshops, tabletop exercises, and conferences, contribute significantly to building regional capacity and enhancing maritime security.**
 - For example, the CSC's tabletop exercises, like the one organized by the **Indian Coast Guard in Kolkata in March 2023,** are vital for maintaining coordination between the member states' militaries during joint operations.

Way Forward:

- ◁ **Institutional Strengthening:** Strengthening the institutional framework of the CSC to enhance coordination and decision-making.

- ◁ **Regular Dialogues:** Holding regular high-level dialogues and meetings to discuss emerging security challenges and devise joint strategies.
- ◁ **Research and Innovation:** Promoting joint research and innovation projects in maritime security and other relevant areas.
- ◁ **Engagement with External Partners:** Engaging with external partners and organizations to gain additional support and resources for CSC initiatives.

PEPPER IT WITH:
SAGAR Vision, QUAD grouping, SAARC

- According to the **Astana Declaration**, member states underscored the SCO's role in bolstering global peace, security, and stability and shaping a new democratic, equitable international political and economic order, inviting the global community to join the initiative.

The following decisions have been signed by the Heads of State:

- The declaration also introduced the initiative "**On World Unity for Just Peace, Harmony, and Development**," inviting the global community to join in this effort.
- The **SCO Development Strategy** until 2035, outlining collective contributions in light of Belarus gaining membership status.
 - The cooperation programs to combat terrorism, separatism, and extremism for 2025-2027.
 - The **Anti-Drug Strategy** for the next five years and its corresponding Action Program.
 - Strategies for energy cooperation until 2030.
 - **Economic Development Strategy's Action Plan** until 2030.
 - Resolutions encompassed the Association of Investors, programs for developing cooperation in protected areas and eco-tourism, and mechanisms for financing SCO project activities.
 - **Qingdao City in China** was declared the SCO Tourism and Cultural Capital for 2024-2025.

About Shanghai Cooperation Organization (SCO):

- Its origins lie in the "**Shanghai Five**", formed in 1996 and consisting of **China, Russia, Kazakhstan, Kyrgyzstan, and Tajikistan**.

Shanghai Cooperation Organization (SCO) Summit Meet 2024

News Excerpt:

The Indian External Affairs Minister attended the meeting of the SCO Council of Heads of State held in **Kazakhstan's capital, Astana**.

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More about the News:

- Indian External Affairs Minister held talks with **his counterparts from SCO members Tajikistan, Russia, China, and the newest member Belarus**, on the sidelines of the two-day summit.
- India also **welcomed Belarus** to the SCO as its newest member.

Key outcomes of Summit:

- The key outcome was the signing of the **Astana Declaration**, which underscores the commitment to non-interference in internal affairs and the importance of reforms to strengthen the United Nations (UN).



- Building on this, SCO was established on **June 15, 2001**, in Shanghai as an international organization, and Uzbekistan was also included as a sixth member.
- **India and Pakistan joined in 2017**, and **Iran** was admitted as a full member in 2021.
- Before the inclusion of Belarus (Admitted in 2024), it had nine members: **India, Iran, Kazakhstan, China, Kyrgyzstan, Pakistan, Russia, Tajikistan, and Uzbekistan.**
- Afghanistan and Mongolia hold **Observer Status.**
- The **headquarters** of the Shanghai Cooperation Organization (SCO) is located in **Beijing, China.**

Way Forward:

- ◁ India must use the SCO as a platform for **multilateral diplomacy** to help India in advancing its regional and global interests.
- ◁ We must **ensure active participation** in all SCO meetings and initiatives.
- ◁ India must take a **leadership role** in areas where it has expertise, such as **IT, pharmaceuticals, and space technology.**
- ◁ Partnering with SCO members on **scientific research and innovation projects** will enhance ties.
- ◁ Investing in **regional infrastructure projects** that enhance connectivity and trade will be important in the future.

PEPPER IT WITH:
Line of Actual Control, Make in India, BRICS grouping

ENVIRONMENT

Upper Siang Project

News Excerpt:

Locals are protesting against the mega-dam project in Arunachal Pradesh on the Upper Siang River.

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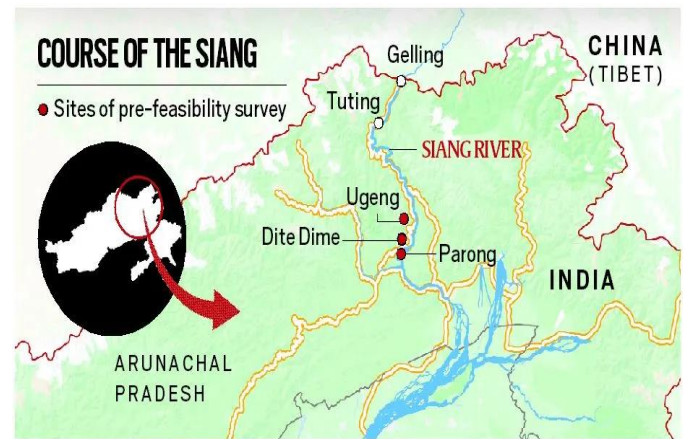
More about the project:

- The Upper Siang Multipurpose Storage Project is a hydropower initiative proposed in the **Upper Siang district of Arunachal Pradesh.**
- This project aims to harness the potential of **the Siang River, known as the Tsangpo in Tibet.**
- **Siang River** originates near **Mount Kailash** and traverses over 1,000 km before **entering Arunachal Pradesh** and eventually becoming the **Brahmaputra in Assam.**
- **The proposed project, with a capacity of 11,000 megawatts,** replaces the earlier planned **Siang Upper Stage-I and Stage-II projects** and **is set to be the largest dam in the subcontinent at 300 meters in height.**
- The **National Hydroelectric Power Corporation (NHPC)** is responsible for constructing this mega dam.

Significance of the Project:

- The Upper Siang project is significant not only for its **hydropower potential** but also for its **strategic importance.**
- India views this project as a countermeasure to China's hydropower activities on the Tsangpo River, especially considering China's plan for a 60,000 MW super dam in Tibet's Medog county.
 - This super dam is expected to divert water to China's arid northern regions, potentially reducing the flow into India.
- The Upper Siang Dam would act as a reservoir to mitigate the impacts of this reduced flow, ensuring water security for the region.

Environmental and Social Concerns:



- Despite its strategic and hydropower potential, the Upper Siang project faces significant opposition from local communities and activists.
- The **Siang Indigenous Farmers Forum (SIFF), Dibang Resistance,** and **North East Human Rights** have raised concerns about the project's environmental and social impact.
- The memorandum prepared by these groups **highlights the threat to delicate ecosystems, wildlife habitats, and biodiversity in the region.**
- The project is **expected to submerge more than 300 villages, displacing the Adi tribe and affecting their ancestral lands and cultural practices.**
- Local activists **emphasize that Arunachal Pradesh already hosts numerous dams, and the proposed mega-dam would further burden the region's rivers.**
- The potential displacement of the local tribal population **raises concerns about the sustainability of their traditional way of life.**

Way Forward:

- **Ensure local community involvement** through transparent consultations and participatory planning.
- Develop **fair compensation and livelihood restoration** plans for displaced communities while using the CSR package effectively for health, education, and

infrastructure improvements, and invest in sustainable development projects for long-term benefits.

- **Conduct thorough environmental and social impact assessments,** establish independent monitoring bodies and implement advanced water management systems.

PEPPER IT WITH:
 North East Human Rights, Siang River, NHPC

- **Balance the project's strategic importance** with local concerns, advocating for policy reforms that protect indigenous rights and environmental sustainability.

AI Comes to the Rescue of Elephants

News Excerpt:

The recent deployment of Gajraj by Indian Railways has highlighted the use of technology in elephant conservation efforts.

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AI Solutions for Elephant Safety

- In India, the Indian Railways has **leveraged its extensive optical fibre cable (OFC) network to introduce an AI-based system called Gajraj.**
- This system **uses geophonic sensors on OFC lines to detect the deep, resonant footsteps of passing elephants.**
- The **AI analyses the data, identifying elephant-specific vibrations, and promptly sends alerts to locomotive drivers, enabling them to reduce train speeds.**
 - The Gajraj system is **operational in the Alipurduar area of North West Bengal,** a region that has experienced several tragic accidents involving elephants.

The elephant population in India is estimated to be between **25,000 and 30,000**, earning the species an "endangered" status

Their current range is only **3.5%** of its historical extent, now limited to the **Himalayan foothills, the northeast, some forests of central India, and the hilly forests of the Western and Eastern Ghats**

Concerns Related to Elephants:

- One of the significant concerns for elephant conservation is the **fragmentation of their habitat.**

- These small, forested areas interspersed with human-developed landscapes not only restrict elephants' movement but also limit their breeding choices.
- This fragmentation leads to genetic bottlenecks, reducing the long-term fitness of the herds.
- The frequent movement of elephants across these fragmented habitats often brings them into contact with roads and railway lines, increasing the likelihood of accidents.
 - **Female elephants cover a range of about 500 sq. km, making road or railway crossings inevitable in fragmented landscapes.**

Successful Practices:

- Efforts to mitigate human-elephant conflicts and ensure safe migration routes have led to the identification of **18 elephant routes between Tamil Nadu and Kerala.**
- **Wildlife corridors, such as the Motichur-Chilla corridor in Uttarakhand, have been established to facilitate safe migration with minimal human contact.**
 - This corridor connects Corbett and Rajaji National Parks, promoting genetic flow between elephant populations.
 - **Total Elephant corridors in India have now increased to 150.**
- In Canada, a study implemented train-triggered warning systems with flashing lights and bell sounds to condition animals to associate these signals with approaching trains.
- The study showed that large animals, like elks and grizzly bears, responded by leaving the tracks about 17 seconds before the train arrived when warnings were present, compared to 10 seconds without warnings. **Similar practices can be adopted for Elephant conservation in India.**

PEPPER IT WITH:
 Optical Fibre Cable, Migration Corridors, Project Elephant

ELEPHANTS HAVE NAMES FOR EACH OTHER.

- A recent study published in the **journal Nature** offers groundbreaking insights into the complex communication systems of elephants.
- Using artificial intelligence (AI) tools, scientists have found evidence that elephants have their own names, which they use to address each other.
- This **discovery places elephants among the few animals known to use individual names, similar to humans,** but without imitating the addressee's calls.
- During the research, playback experiments showed that **elephants reacted more strongly to rumbles that were directed specifically at them.**
- No evidence was found that elephants imitate the calls of the receiver, unlike parrots and dolphins.

Aspect	Asian Elephants	African Elephants
Habitat	Forests, grasslands, scrublands, and agricultural areas in South and Southeast Asia. (India, Sri Lanka, Myanmar, Thailand, etc.)	Savannas, forests, deserts, and marshes across sub-Saharan Africa. (Botswana, Tanzania, Kenya, South Africa, etc.)
IUCN Status	Endangered	African forest elephant: Critically Endangered African savanna elephant: Endangered
Lifestyle	Tend to live in smaller herds led by females (matriarchal society), more forest-dwelling.	They live in larger herds and are also matriarchal; savanna elephants are more open-terrain dwelling, while forest elephants inhabit dense forests.
Primary Diet	Grasses, leaves, bamboo, bark, roots, and small amounts of fruits.	Grasses, fruits, bark, and leaves: Savanna elephants have a varied diet, while forest elephants consume more fruits.
Physical features	Smaller in size; height ranges from 2-3.5 meters, weight ranges from 2,000-5,500 kg. Only males have tusks.	Larger in size; height ranges from 3-4 meters, weight ranges from 4,000-8,000 kg Both male and female African elephants can have tusks
Gestation period	Approximately 18-22 months	Approximately 22 months

SDG National Indicator Framework, 2024

News Excerpt:

The **Ministry of Statistics and Programme Implementation** released the National Annual Progress Report on Sustainable Development Goals (SDGs), titled **"Sustainable Development Goals-National Indicator Framework Progress Report 2024"**.

- The report provides **data-driven insights** about **India's progress** and comprehensive information on **monitoring sustainable development goals**.

National Indicator Framework (NIF)

- India** is dedicated to implementing the SDGs through **nationally defined indicators** aligned with its own priorities and needs.
- To integrate SDGs into national and sub-national policies and programs, **NITI (National Institution for Transforming India) Aayog** has aligned the SDGs with centrally sponsored programs across various Central Ministries and Departments.
- To support this effort, the **Ministry of Statistics and Programme Implementation (MoSPI)** developed a **National Indicator Framework (NIF)** for SDGs.
- Initially comprising **306 national indicators**, the NIF was created through detailed consultations with relevant Ministries, UN Agencies, and other stakeholders.
- As of **June 29, 2024**, the **NIF includes 290 national SDG indicators**. MoSPI coordinates with Ministries and Departments to collect data on these indicators.

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Sustainable Development Goals (SDGs):

- In **September 2015**, during its **70th Session**, the **United Nations General Assembly** adopted **"Transforming our World: The 2030 Agenda for Sustainable Development."**
- This landmark document outlines **17 Sustainable Development Goals (SDGs)** and **169 associated targets**, which took effect on **January 1, 2016**.
- The SDGs address **global challenges** such as poverty, inequality, climate change, environmental degradation, and the need for peace and justice.
- The **2030 Agenda emphasizes** the importance of **global partnerships and collaborative efforts** involving governments, UN agencies, the private sector, civil society, and the public to ensure prosperity, peace, and a sustainable planet for current and future generations.

PEPPER IT WITH:
MDGs, SDGs, 2030 Agenda



Strategic and Environmental Concerns in the Great Nicobar Project

News Excerpt:

The **opposition party and conservationists** have described the proposed **Rs 72,000-crore infrastructure development** on **Great Nicobar Island** as a **"grave threat"** to the **indigenous inhabitants** and the island's **delicate ecosystem**.

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Proposed projects in the Great Nicobar island:

- India aims to develop **Great Nicobar** through a **three-phase, 30-year project**, which has faced continuous criticism from **conservationists, wildlife biologists, naturalists**, and some **local tribal councils**.
- The project is managed by the **Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO)**.
- This project includes an **International Container Transshipment Terminal (ICTT)**, a **greenfield international airport** with a peak hour capacity of 4,000 passengers, a **township**, and a **gas and solar-based power plant** spread across 16,610 hectares.

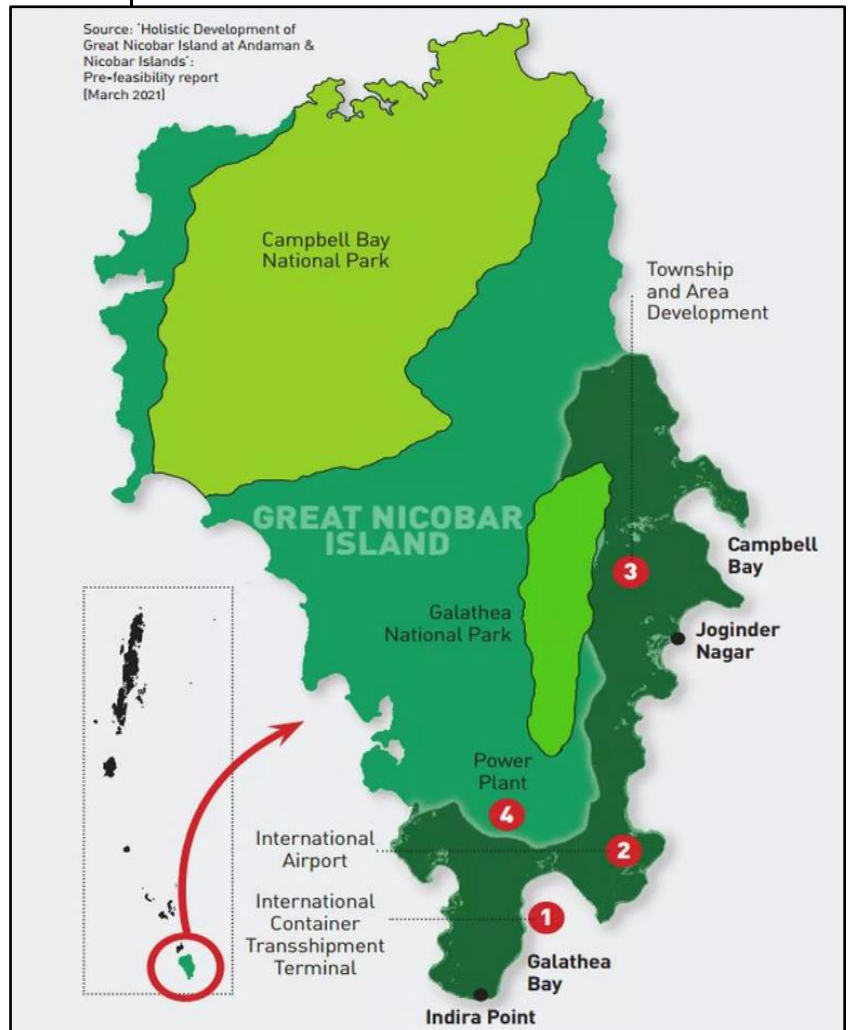
Andaman and Nicobar Islands:

- The **Andaman and Nicobar Islands** comprise **836 islands**, divided into the **Andaman Islands** to the north and the **Nicobar Islands** to the south by the **150-km wide Ten Degree Channel**.
- Great Nicobar**, the southernmost and largest of the **Nicobar Islands**, spans **910 square kilometres** of primarily **tropical rainforest** in the southeastern **Bay of Bengal**.
- Indira Point**, India's **southernmost tip**, lies only **90 nautical miles** (less than 170 km) **from Sabang**, at the northern tip of **Sumatra**, the largest island in **Indonesia**.
- The island is home to **two national parks**, a **biosphere reserve**, small populations of the **Shompen and Nicobarese tribes**, and a few thousand non-tribal settlers.

Strategic and Security Concerns of the Projects:

- The **Bay of Bengal and Indian Ocean region** are critical to **India's strategic and security interests**, especially as **China's People's Liberation Army Navy** seeks to expand in the area.
- India is wary of **Chinese maritime forces** at **Indo-Pacific** choke points like **Malacca, Sunda, and Lombok**.

- China's expansion efforts** include a **military facility** on the **Coco Islands (Myanmar)**, just 55 km north of the **Andaman & Nicobar Islands**.
- Recently, the **Indian army** upgraded its **military infrastructure** in the **Andaman & Nicobar Islands**, including enhanced airfields, jetties, logistics, storage facilities, and surveillance infrastructure.
- These upgrades aim to **support additional military forces**, larger warships, aircraft, missile batteries, and troops, ensuring close surveillance and strong military deterrence in the region.



Significance of this project:

- The project's **"holistic development"** plan emerged from a **NITI Aayog report**, which highlighted the **strategic potential** of the island, equidistant from **Colombo (Sri Lanka)**, **Port Klang (Malaysia)**, and **Singapore**.
- Its proximity to the **Malacca Strait**, a crucial waterway connecting the Indian Ocean to the Pacific, **positions the ICTT** to enhance Great Nicobar's role in the **regional and global maritime economy**.
- A planned **"greenfield city"** will capitalize on both the **maritime and tourism potential** of the island.

- The proposed **ICTT and power plant** site is at **Galathea Bay** on the southeastern corner of **Great Nicobar**, an **uninhabited area**.

Environmental Issue:

- Critics**, including **wildlife conservation researchers**, **anthropologists**, and **civil society groups**, argue that the project endangers the **Shompen tribe**, a vulnerable group of **hunter-gatherers** with a population of a few hundred living in a tribal reserve on the island.
- They claim the **project violates tribal rights** and threatens the **island's ecology**, with nearly a million trees at risk.
- There are also concerns about the **port project damaging coral reefs**, affecting the **local marine ecosystem**, and threatening species like the **Nicobar Megapode bird** and **leatherback turtles** in **Galathea Bay**.
- Experts also highlighted the **seismic risks**, noting the proposed port is in a zone that experienced significant subsidence during the **2004 tsunami**.

PEPPER IT WITH:
Coco Islands, Malacca Strait, Galathea Bay

Impact of Air Pollution on Pollinators

News Excerpt:

According to a recent study, **Bees and other beneficial insects** are more adversely affected by **air pollution** compared to **crop-destroying pests**.

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About the Research:

- Researchers from the **University of Reading** reviewed data from 120 scientific papers, examining the responses of 40 insect species across 19 countries to pollutants such as **ozone**, **nitrogen oxides**, **sulfur dioxide**, and **particulate matter**.
- The study was published in the **journal Nature Communications**.

Key Findings of the Study

- The study revealed that **pollinators**, including **bees**, **moths**, and **butterflies**, experienced a **39% decline** in foraging efficiency when exposed to high levels of **air pollution**.
- In contrast, plant-eating pests like **aphids** showed no significant impact.
- The study suggests that **beneficial insects**, such as **bees and wasps**, are more susceptible to **air pollution** due to their reliance on **scent-based communication**.
 - These insects use **airborne chemical signals** to locate **flowers**, **find mates**, or **hunt prey**.

- Air pollutants** can chemically alter these scent trails or interfere with the insects' ability to detect them, **disrupting their sensory environment**.

Impact on Beneficial vs. Pest Invertebrates:

- Air pollution significantly reduces the performance of **beneficial invertebrates**, such as **pollinators** and **pest regulators**, but does not affect **plant pest invertebrates**.
- Ozone pollution** has the most detrimental effects, impairing **beneficial invertebrates** even at concentrations below air quality standards.
- Other pollutants studied include **nitrogen oxides**, **sulfur dioxide**, and **particulate matter**.

PEPPER IT WITH:
Pollinator, Pest Invertebrates, pollutants

Pollinator

- A **pollinator** is any agent that aids in **transferring pollen** from the **stamen (male part)** to the **stigma (female part)** of the same or another flower.
- This pollen movement is essential for **plant fertilization**, leading to the production of **fruits, seeds, and new plants**.
- While some plants can **self-pollinate**, others **rely on wind or water for pollen transfer**.
- Many flowers, however, depend on insects and animals—such as **bees, wasps, moths, butterflies, birds, flies**, and small mammals, including **bats**—for pollination.
- Some pollinators, like many **bee species**, intentionally **collect pollen**. Others, like **butterflies, birds, and bats**, unintentionally **transfer pollen**.
- As they feed on nectar or drink from flowers, pollen adheres to their bodies and is carried from one flower to another, **facilitating pollination**.

In fact, at least **75% of all flowering plants** on Earth are pollinated by insects and animals.

Report on Planetary Health and Human Wellbeing

News Excerpt:

The **United Nations Environment Programme (UNEP)**, in collaboration with the **International Science Council**, has published "**Navigating New Horizons – A Global Foresight Report on Planetary Health and Human Wellbeing**".

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Background of the report:

- It presents insights into **eight critical global shifts** that are exacerbating the **triple planetary crisis of climate**

change, biodiversity and nature loss, and Pollution and waste.

- The report identifies **eighteen signals of change, distilled from the expertise of hundreds of global experts and consultations with regional stakeholders, including youth.**
 - **These signals offer a glimpse into potential disruptions, both positive and negative, that warrant close monitoring.**
- The report emphasizes the need to create an enabling environment for better **decision-making through a new social contract, agile and adaptive governance, and integrated, accessible data and knowledge.**

Key Messages of the report:

- **Polycrisis Era:** The world faces a **synchronized polycrisis driven by rapid technological developments, resource competition, conflicts, displacement, inequalities, distrust, misinformation, and multipolarity**, with significant environmental implications.
- **Environmental Degradation:** Despite efforts, **environmental degradation persists.** The **Great Acceleration** exacerbates this with increasing material extraction, fossil fuel use, and extreme weather events. Climate change could release ancient pathogenic microbes, posing health risks.
- **Resource Scarcity:** The **demand for critical minerals to meet net-zero targets and digital transformation is creating new tensions.** Increased mining, including deep sea and space mining, threatens biodiversity and local communities, highlighting the need for sustainable practices.
- **AI's Environmental Impact:** While AI offers growth opportunities, **it also demands critical minerals and water resources**, necessitating responsible resource management and environmental consideration in AI governance.
- **Conflict and Environment:** **Armed conflicts are increasing**, driven by resource scarcity and climate change, resulting in ecosystem degradation and pollution, with long-term recovery challenges from contamination and munitions residues.
- **Forced Displacement:** **Forced displacement, driven by conflict and climate change, impacts human health**

and the environment, with significant strain on resources and services like water, sanitation, and energy.

- **New Social Contract:** Addressing these shifts **requires a new social contract**, engaging diverse stakeholders, including indigenous peoples and youth, and rethinking progress beyond GDP.
- **Agile Governance:** Implementing SDGs and climate targets needs agile governance with shorter-term targets, community empowerment, and financial system reconfiguration to reduce inequalities and environmental crises.
- **Data Integration:** Effective governance depends on integrated, accessible data for monitoring environmental changes, guiding investments, and improving decision-making.
- **Foresight Adoption:** **Embracing foresight is crucial for shaping a better future** and avoiding the negative consequences of past poorly considered decisions, such as those related to fossil fuels and plastic pollution.

Significance of the report:

- The insights from the report will be integrated into **UNEP's strategic planning, potentially influencing the next UNEP Medium-Term Strategy (MTS).**
- This presents an opportunity to expand programs in **areas such as artificial intelligence, new technology, and robotics in agriculture, prompting discussions on the level of engagement in these issues.**
- By adopting a proactive posture, **UNEP aims to modernize its tools for greater efficiency and cost-saving**
- The report will also serve as **UNEP's contribution to the Summit of the Future.**
 - While it is **not expected to substantially influence the Summit, it will provide valuable input into the preparatory discussions and events, including the High-level Political Forum.**
 - These contributions will be particularly **relevant to discussions on environmental dimensions leading up to the Summit.**

PEPPER IT WITH:
UNEP, International
Science Council,
Polycrisis

SCIENCE & TECHNOLOGY

ISRO's Plans for Planetary Defence

News Excerpt:

The Indian Space Research Organisation (ISRO) recently expressed interest in planetary defence, specifically targeting the asteroid Apophis, which will pass by Earth at a distance of 32,000 km in 2029.

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SPACE OBJECTS

ASTEROID: Rocky/metallic objects moving around Sun, mostly leftovers from the formation of solar system. Asteroids less than 1 metre in diameter are called meteoroids.

METEOR: The streak of light produced when an asteroid/meteoroid encounters friction of Earth's atmosphere.

METEORITE: Unburnt fragment of asteroid that falls to Earth

HOW BIG?

APOPHIS: About 450 m at its widest

CHELYABINSK, which exploded over Russia in 2013: about 20 m at its widest

ASTEROID THAT ELIMINATED DINOSAURS: 10-15 km wide

Apophis: The Asteroid of Concern

- Discovered in **2004**, Apophis initially posed a significant threat, with scientists estimating a **2.7% chance of collision with Earth.**
- Although subsequent observations dispel fears of a collision in **2029, 2036, or 2068.**
- Apophis will still **come close enough in 2029 to be visible to the naked eye, flying by at a distance comparable to some communication satellites.**

The Need for Planetary Defence

- While Apophis may not pose an immediate threat, asteroids frequently enter Earth's atmosphere.
- Most are small and burn up due to friction, but larger ones can cause significant damage.**
 - For instance, a **20-meter-wide asteroid exploded above a Russian town in 2013, releasing energy equivalent to 26-33 times the Hiroshima atom bomb.**
 - This event caused widespread damage and injuries, highlighting the need for early detection and planetary defence measures.

Advancing Planetary Defence Technology:

- NASA demonstrated a significant leap in planetary defence technology in 2022 when, under a DART mission, a spacecraft intentionally crashed into the asteroid Dimorphos, altering its trajectory.
 - Although Dimorphos was not a threat, **this mission marked a critical step in developing capabilities to deflect potentially dangerous asteroids.**

Global Interest and Collaboration:

- The approach of Apophis has garnered significant interest from global space agencies.
- Several missions are expected to be launched to study the asteroid, including private agency efforts.

- NASA has already redirected a spacecraft, initially deployed to study the asteroid Benu, to track Apophis.**

- This mission will involve close observation and data collection over 18 months.

ISRO's Ambition in Planetary Defence:

- Although the details of ISRO's participation are yet to be decided, the agency might send its own spacecraft or collaborate with other space agencies.
- ISRO's intent to join the global effort in studying Apophis reflects its growing capabilities and ambition in space exploration.
- By venturing into planetary defence, ISRO aims to contribute proactively to global space objectives, solidifying its position as a leading space agency with advanced technological prowess.

PEPPER IT WITH:

Apophis, Dimorphos, DART mission

Meteorites on Mars

News Excerpt:

Seismic recordings from NASA's InSight probe have unveiled that Mars is hit by basketball-sized meteorites almost daily, a frequency five times higher than previous estimates.

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What is a meteorite?

A meteorite is debris from a comet, asteroid, or meteoroid that survives atmospheric entry to reach a planet's or moon's surface.

Meteorites, which can create craters, are classified into stony, iron, and stony-iron types based on their composition.

Entering the atmosphere causes it to heat up and glow, forming a meteor or fireball; the brightest are called bolides.

For geologists, a bolide is a meteorite large enough to create a crater.

Modern classification considers structure, chemical and isotopic composition, and mineralogy.

Previous Estimates and New Discoveries:

- Earlier scientists estimated the frequency of meteorite impacts on Mars by analyzing images from orbiting spacecraft or by creating models based on lunar craters.
- NASA's InSight probe, which landed in Elysium Planitia in 2018, has allowed scientists to listen to the seismic activity within Mars for the first time, revealing a much higher rate of impacts.**

About InSight Lander

The Interior Exploration using Seismic Investigations, Geodesy, and Heat Transport (InSight) was a NASA Discovery Program mission that placed a single geophysical lander on Mars to study its deep interior.

InSight was more than a Mars mission.

- It addressed one of the most fundamental issues of planetary science: understanding the processes that shaped the rocky planets of the inner solar system (including Earth) more than four billion years ago.
- The mission ended in December 2022 after more than four years of collecting unique science on Mars.

InSight's Contributions:

- The InSight mission's seismometer has been pivotal in this discovery.
- By detecting the internal rumblings of Mars, researchers could track meteorites hitting the surface.
- Listening for impacts seems to be more effective than looking for them to understand how often they occur.

What is the habitat like on Mars?



The **temperature** on Mars ranges between **20 degrees Celsius and -153 degrees Celsius.**



Mars has a **rocky surface with canyons, volcanoes, dry lake beds, and craters,** all covered in **red dust.**



Winds can create dust storms, with tiny ones resembling tornadoes and large ones occasionally enveloping the entire planet. They are visible from Earth using telescopes.



It has about **one-third the gravity of Earth** and the **atmosphere is much thinner than Earth's,** containing more than **95% carbon dioxide and less than 1% oxygen.**



The planet **turns on its axis more slowly than Earth,** and being farther from Sun, **takes longer to revolve around the Sun.**
A day on Mars is 24.6 hours and a year is 687 Earth days long.

The Difference Between Earth and Mars Meteor Showers:

- Mars, being roughly twice the size of the Moon and closer to the solar system's main asteroid belt, is more susceptible to meteorite impacts than Earth.**
- Unlike Earth, which has a dense atmosphere that breaks apart most meteorites before they reach the surface, Mars has a much thinner atmosphere (100 times thinner than Earth's).
 - The lack of atmospheric protection means that more meteorites reach the Martian surface intact, creating craters.**

Significance of the Findings

- The researchers utilized InSight's seismic data to estimate that **Mars experiences between 280 to 360 meteorite impacts annually,** each creating craters larger than eight metres (26 feet) in diameter.

- This **rate is about five times higher than previous estimates based solely on orbital imagery.**

Challenges for Orbital Observations

- Mars' frequent and intense dust storms pose a significant challenge for orbiting spacecraft in detecting new meteorite craters.
- Flat and dusty regions, where new craters are easiest to spot, cover less than half of Mars' surface.
- However, **InSight's seismometer can detect every impact within its range, overcoming the limitations faced by orbital observations.**

Methodology and Future Implications

- By tracking specific acoustic signals produced by meteorite impacts, **scientists could estimate the size of the craters and their distance from InSight.**
- They extrapolated this data to determine the number of meteorite impacts across the entire planet.

A human mission to Mars

- NASA is developing the capabilities needed to send humans to an asteroid by 2025 and Mars in the 2030s.
- China has planned crewed launches to Mars are planned for 2033, 2035, 2037, 2041, and beyond.

Implications for Future Mars Missions

PEPPER IT WITH:
InSight probe, Meteorite, NASA

- The study's findings suggest that a significant meteorite strike, creating a 30-metre crater, occurs on Mars approximately once a month.
- This frequent bombardment is a crucial consideration for future manned missions to Mars,** as it poses potential risks to astronauts and equipment on the Martian surface.

Understanding plutonium isotope fission

News Excerpt:

A recent study on plutonium isotope fission has provided significant updates that have implications for various fields, including nuclear reactor design and nuclear medicine.

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More about the research:

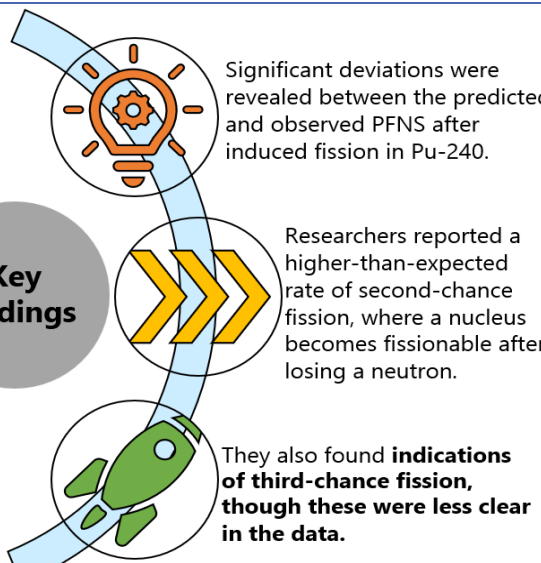
- This research, conducted at the **Los Alamos Neutron Science Centre,** focuses on the **Prompt Fission Neutron Spectrum (PFNS) of plutonium-240 (Pu-240), revealing key differences between predicted and observed outcomes.**
- The study is only the second attempt to measure the PFNS of induced fission in Pu-240 and the first to use neutrons with energy greater than 0.85 mega-electron-volt (MeV).

Key Findings

Significant deviations were revealed between the predicted and observed PFNS after induced fission in Pu-240.

Researchers reported a higher-than-expected rate of second-chance fission, where a nucleus becomes fissionable after losing a neutron.

They also found **indications of third-chance fission, though these were less clear in the data.**



The Experiment:

- ◁ The researchers used a particle accelerator to bombard a tungsten disc with pulses of protons, producing neutrons with energy ranging from 0.01 to 800 MeV.
- ◁ These neutrons were then directed to a chamber containing a highly pure Pu-240 sample, weighing just 20 milligrams, to minimize the emission of alpha particles.
- ◁ An array of liquid scintillators, substances that emit flashes of light when struck by energetic particles, tracked the fission products emitted by the Pu-240 sample.
- ◁ The researchers meticulously subtracted contributions from spontaneous fission, alpha particles, and other sources to isolate data relevant to neutron-induced fission, focusing on incident neutrons with energies between 1 and 20 MeV.

Significance and Applications:

- ◁ In the context of nuclear power, understanding the behavior of Pu-240 is particularly relevant for India's second stage of its nuclear power program, which focuses on plutonium fission.
 - The prototype fast breeder reactor (PFBR) at the Madras Atomic Power Station, which uses plutonium recovered from spent CANDU (Canada Deuterium Uranium) fuel, will contain significant quantities of Pu-240. Insights from this study will aid in improving reactor design and safety.
 - § CANDU is a Canadian design for pressurized heavy-water reactors, such as those India uses for its first stage.
- ◁ Moreover, the updated data on Pu-240 fission will benefit various applications that rely on nuclear reaction models.
- ◁ These include designing nuclear reactors, radiation shielding, calculating radiation doses in nuclear medicine, and even tracing the origins of elements in the universe.

Future Scope:

- ◁ The study's findings highlight the need for ongoing research to refine nuclear reaction models.
- ◁ Current models are based on data libraries compiled from various experiments, reactor operation records, and simulations.
- ◁ The discrepancies observed in this study suggest that these data libraries, including **ENDF, JEFF, and JENDL, need to be updated to incorporate new data on multi-chance fission and pre-equilibrium neutron emission processes.**
- ◁ Future research will likely focus on further experiments to clarify the contributions of different fission processes and refine the energy thresholds for pre-equilibrium neutron emission.
- ◁ These efforts will enhance the accuracy of nuclear reaction models, ultimately leading to improved applications across nuclear science and engineering.

PEPPER IT WITH:
PFBR, CANDU, Pu-240

Innovative Fabric for Pesticide Protection

News Excerpt:

Researchers at the **Institute for Stem Cell Science and Regenerative Medicine (inStem)** in Bengaluru have created an **anti-insecticide fabric** that effectively neutralizes organophosphate-based pesticides.

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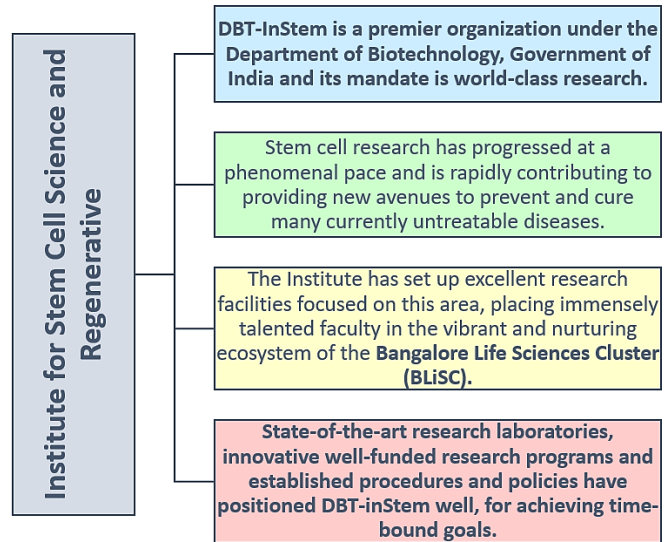
How does it work?

- ◁ **Organophosphate pesticides inhibit an enzyme called acetylcholinesterase (AChE), which is essential for neuromuscular function.**
- ◁ Inhibition of AChE can lead to severe health issues, including **learning deficits, suffocation, paralysis, and muscle weakness.**
- ◁ The innovative fabric developed by inStem **neutralizes these pesticides before they can reach the skin, preventing these adverse effects.**
- ◁ The team **coated cotton fabric with small nucleophilic molecules that are covalently bonded to the fabric's cellulose.**
- ◁ **These molecules detoxify pesticides upon contact through nucleophile-mediated hydrolysis, breaking down the toxic compounds into harmless products.**
- ◁ **The fabric remains breathable and durable, retaining its protective properties even after 150 washes.**

Research and Collaboration:

- ◁ The development of this fabric was a collaborative effort with **Sepio Health Pvt Ltd, a spin-off company from inStem.**
- ◁ The research, recently published in Nature Communications, **demonstrated the fabric's efficacy in neutralizing organophosphate pesticides.**

- ◁ The design of a **nucleophile capable of deactivating a wide range of organophosphates and carbamates was a challenging aspect** of the research.
- ◁ Optimizing the chemistry for industrial application was key to developing this effective anti-pesticide fabric.
- ◁ **Animal studies showed that rats exposed to pesticides, while protected by the special fabric, maintained normal levels of active AChE and did not suffer from the lethal effects observed in unprotected rats.**



Significance of the innovation:

- ◁ This breakthrough offers significant protection to farmers frequently exposed to these toxic chemicals.
 - **Unlike previous solutions, such as topical gels, which may suffer from poor compliance, this fabric presents a practical and durable alternative.**
- ◁ It addresses a critical need for protecting farmers from chronic pesticide toxicity, a significant health risk due to frequent exposure.
- ◁ The fabric's durability and reusability make it an affordable and practical solution, likely to increase compliance among users compared to topical gels.
- ◁ **The fabric's mechanism does not act as a physical barrier but rather deactivates the pesticides hydrolytically, preventing AChE inhibition.**

Way Forward:

- ◁ The success of this fabric opens up possibilities for further innovation in

- protective clothing for various hazardous environments.
- ◁ Further research may explore the application of this technology to other types of pesticides and chemicals, broadening the scope of protection offered.
- ◁ Additionally, scaling up production and ensuring widespread availability could significantly enhance the safety and health of farmers globally.

PEPPER IT WITH:
Anti-insecticide fabric, nucleophile, cellulose

MeDevIS: Medical Devices Information System

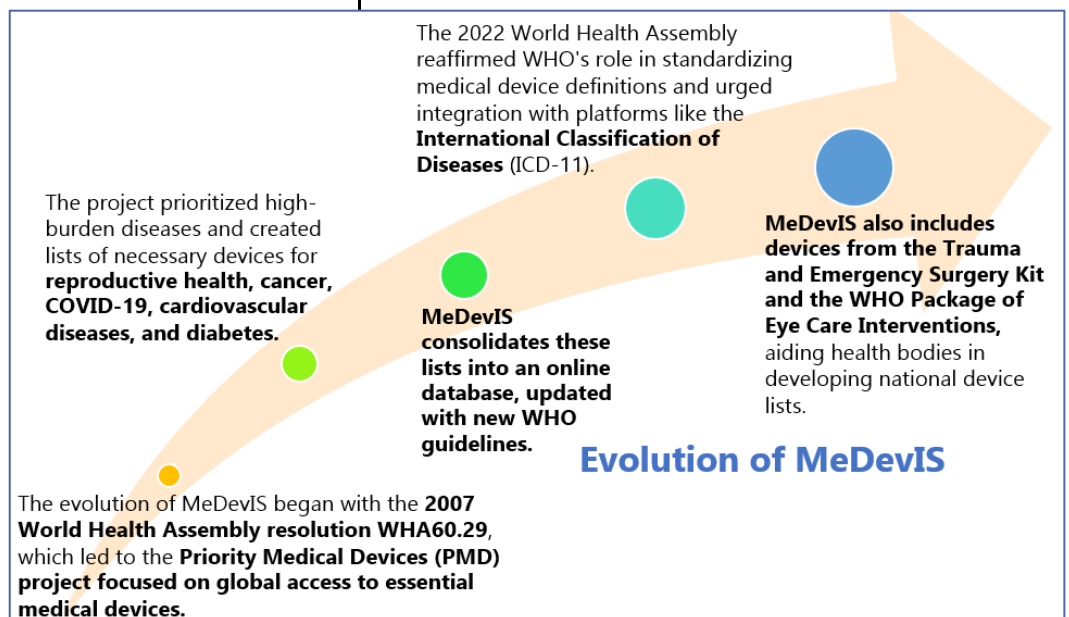
News Excerpt:

The World Health Organization (WHO) has recently introduced MeDevIS, an innovative online platform designed to provide users with extensive information on medical devices.

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Objectives of MeDevIS:

- ◁ It aims to improve access to medical devices worldwide based on four critical components – **availability, accessibility, appropriateness, and affordability.**
- ◁ It aims to streamline access to information on medical devices **to enhance decision-making processes.**
- ◁ The decisions are related to the **selection, procurement, and utilization of medical devices.**
- ◁ **This centralized repository of data will be crucial** for the prevention, diagnosis, and treatment of various health conditions.
- ◁ **It will assist healthcare professionals** in selecting the most appropriate medical devices for various health conditions.



- Enable governments and regulatory bodies to **understand medical device requirements better and streamline procurement procedures.**
- It will support efforts** to improve the accessibility and quality of medical devices worldwide, **leading to better health outcomes.**

Key Features of MeDevIS:

- Extensive Database:** The platform includes information on **2301 types** of medical devices used across various health areas such as reproductive, maternal, newborn, and child health, non-communicable diseases (e.g., cancer, cardiovascular diseases, diabetes), and infectious diseases (e.g., COVID-19).
- User-Friendly Interface:** Designed to be intuitive, MeDevIS allows users to easily navigate and find relevant information on a wide array of medical technologies.
- Detailed Device Information:** Each entry provides detailed descriptions, specifications, and usage guidelines, ensuring that users have access to comprehensive data.
- Global Accessibility:** As a global clearing house, MeDevIS is **accessible to users worldwide**, fostering international collaboration and knowledge sharing.

Significance of MeDevIS:

The launch of MeDevIS marks a significant milestone in **WHO's ongoing efforts to improve global healthcare standards.** The platform holds immense potential in several key areas:

- Empowering Healthcare Professionals:** By providing **easy access to detailed information on a vast array of medical devices**, MeDevIS empowers healthcare professionals to make more informed decisions, ultimately enhancing patient care.
- Supporting Policymakers:** Governments and regulatory bodies can leverage the platform **to better understand the medical device landscape**, facilitating more efficient and effective procurement processes.
- Promoting Global Health Equity:** MeDevIS contributes to WHO's mission of **improving health outcomes by making high-quality medical device information accessible to all**, particularly in low-resource settings.
- By enhancing decision-making capabilities, streamlining procurement processes, and promoting better health outcomes, MeDevIS stands as a testament to WHO's commitment to advancing global healthcare standards.

PEPPER IT WITH:
WHO, Global Health Standards and Equity

AlphaFold 3: Revolutionizing Protein Structure Prediction

News Excerpt:

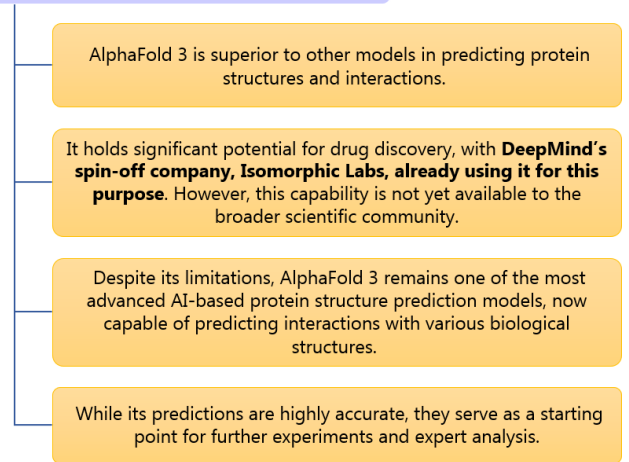
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The three-dimensional structure of the **protein-RNA ion PDB 8AW3**, as predicted by **AlphaFold 3**, **showcases a significant advancement in the field of protein structure prediction.**

Structure of protein and its study:

- Proteins are essential molecules that regulate almost every biological function from birth to death.
- Each protein is composed of a sequence of amino acids, **which contain all the information needed to transform a protein from a linear sequence to a folded, functional 3D structure.**
- The process of protein folding, from its straight form to its final 3D structure, is complex and has long posed a challenge to scientists, known as the protein-folding problem.
- It is essential to know how proteins acquire their shape to understand the molecular foundations of cellular function, organismal biology, and life itself.**

Significance of AlphaFold 3



AlphaFold:

- AlphaFold employs machine learning and artificial intelligence (AI) to predict protein structures from amino acid sequences**, effectively solving the **protein-folding problem without delving into the deeper physical principles underlying this biological process.**
- The landscape of protein structure prediction changed dramatically with the advent of **Google DeepMind's AlphaFold in 2020** and even more so with **AlphaFold 2 in 2021.**

Introduction of AlphaFold 3 and its advancement:

- In a groundbreaking paper published in Nature in May 2024, **DeepMind scientists introduced AlphaFold 3.**

This new iteration builds on its predecessors with even **more transformative capabilities.**

- AlphaFold 3 not only predicts protein structures with greater accuracy but also can predict protein-protein interactions and the structures of other molecules like DNA and RNA, along with their interactions.
- AlphaFold 2 predicted the structure of proteins with revolutionary levels of accuracy. **AlphaFold 3 is even more accurate for proteins, but can also predict the structure of DNA, RNA, and all the other molecular components that make up biology.**
- AlphaFold 3 is also **more user-friendly**, making it accessible to scientists who are not experts in machine learning. One can upload protein sequences to the DeepMind server, and 10 minutes later, you get the results.

How does it work?

- The **original AlphaFold was trained on thousands of sequences and protein structures from the Protein Data Bank**, a vast repository of experimentally determined protein structures.
- AlphaFold is **completely ignoring all the fundamental physics and thermodynamics**. It models based on learning what real structures tend to look like, **taking advantage of tendencies of protein structures that are too subtle for humans to realize.**
- AlphaFold 3 uses a **diffusion model** similar to those used in image-generating software. This model trains on protein structures by adding noise to the data and then attempting to de-noise it.
 - This approach enables the model to reconstruct a real protein structure from a noisy one, enhancing its ability to handle larger datasets.

Scope of improvement:

- While AlphaFold 3 excels at predicting protein-protein interactions, **its reliability in predicting interactions between small molecules and proteins is less robust.**
- Proteins use a language of 20 amino acids, whereas small molecule ligands** (Any substance that binds specifically and reversibly to a biomacromolecule to form a larger complex and alters its activity or function is called a ligand.) **have a much larger vocabulary.**
 - This complexity can lead to the model generating plausible but incorrect predictions.**
- Adding more training data can help mitigate this issue but not entirely eliminate it.
- Researchers can upload protein sequences to the AlphaFold server, but **many are frustrated by the lack of access to the model's full code**, which limits modifications for specific uses.

PEPPER IT WITH:

RNA, DNA, Machine Learning and Artificial Intelligence

- An open letter signed by over 600 researchers criticized this restriction, arguing it hinders scientific progress.
- In response, DeepMind has promised to release the full code within six months. Meanwhile, they have increased the daily job limit on the server.

New 3D model of Human Lung

News Excerpt:

IISc Scientists developed a novel 3D hydrogel culture system that closely mimics the human lung.

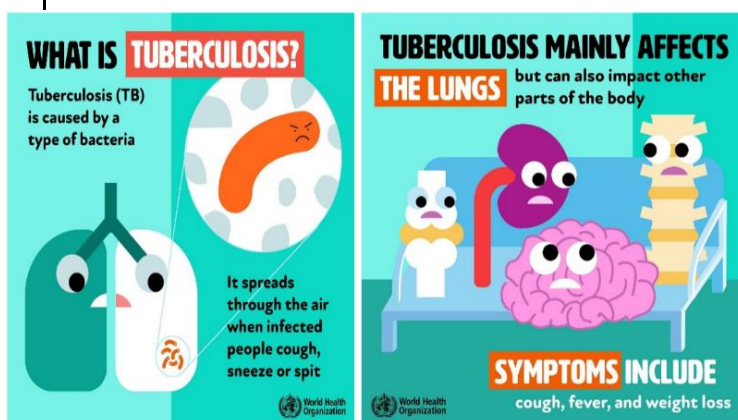
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More about the model:

- The new hydrogel culture is **composed of collagen, a key component of lung tissue.**
- The 3D environment allows researchers to observe how TB bacteria interact with human immune cells over extended periods of up to three weeks compared to just 4-7 days in conventional systems.

Significance of the new model:

- RNA sequencing revealed that cells grown in the hydrogel more closely resemble actual human lung tissue samples than those in traditional cultures.
- It addresses the limitations of traditional 2D culture models.



- The older models fail to replicate the complex 3D structure of lung tissue, potentially skewing research results.
- This increased biological accuracy could lead to more relevant research outcomes. The team also demonstrated the model's potential for drug testing.
- This provides a platform to track and **study how tuberculosis bacteria infect lung cells and test the efficacy of therapeutics used to treat the infection.**

New findings based on the 3D model:

- It has been found that a common TB drug, **pyrazinamide, was effective at much lower, more clinically relevant doses than typically required in 2D cultures.**

Future scope:

- < The researchers have filed an Indian patent for their innovation, which they designed to be easily replicable by other scientists and scalable for industrial drug testing.
- < This breakthrough can expedite further research on TB and potentially lead to more effective treatment.
- < The team is also interested in understanding the mechanism of the action of pyrazinamide, which may help discover new drugs that are more or just as efficient.

PEPPER IT WITH:
Polymers, collagen, pyrazinamide

Hydrogel and its application

- < Hydrogels are water-absorbent polymers that can retain significant amounts of water.
- < They are highly permeable to oxygen and nutrients, **making them ideal for biological applications.**
- < Different body tissues have unique requirements, and **hydrogel properties can be tailored accordingly.**
- < **In tissue engineering (TE), hydrogels act as artificial extracellular matrices (ECM), providing essential support for cell repair and nourishment.**
 - o This adaptability makes hydrogels promising candidates for TE.
- < **ECM is a macromolecular structure that provides mechanical support, stability, and elastic recoil for different pulmonary cells including the lung fibroblasts.**
- < They are also used to model different body parts for research.
- < Scientists are researching their potential to grow replacement body parts in the future, highlighting their significant role `advancing medical treatments.

AI Washing

News Excerpt:

Following the release of OpenAI's ChatGPT in 2022, the world has witnessed an exponential surge in interest surrounding generative AI, this obsessive interest has also given rise to a concerning trend known as "AI washing".

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What is AI Washing?

- < In basic terms, AI washing involves exaggerating the capabilities of a product or service that is sold as 'AI' in order to make it look more sophisticated, innovative or intelligent than it actually is.
- < It can be seen as a form of bandwagon jumping. The term itself derives from 'greenwashing', which is frequently used to describe projects, products or services that overstate how environmentally-friendly they are, to appeal to eco-conscious consumers.

Why is AI washing a Growing Concern?

- < **AI washing is not merely a harmless exaggeration; it can have serious consequences for both consumers and the tech industry.**
- < For consumers, **subpar AI technology can pose data security and privacy risks.**
 - o This can deter them from using technology that could otherwise benefit them.
- < Also, Marketers attempting to AI-wash their products and services will often:
 - o **Overstate their capabilities** – implying that their AI models and algorithms are more powerful, useful or flexible than they actually are.
 - o **Misleadingly use the term 'intelligent'** – when, in fact, the software doesn't use algorithms capable of learning and making decisions without being explicitly programmed how to do so.
 - o **Offer very vague definitions** – Not specifically explaining which elements are 'intelligent' and which rely on traditional software methodologies or human input.
 - o Downplay the amount of human input involved – either on the part of the service provider or the user.
 - o One way of looking at it is that AI washing is like painting 'go-faster' stripes on a car without upgrading the engine, allowing marketers to capitalize on the excitement around AI while not offering anything that's genuinely revolutionary.

Examples of AI Washing:

- < The rapid advancement and vast potential of AI have pushed many companies, including tech giants, to roll out AI-based products without fully developed technology.
 - o For instance, **Google** unveiled its multimodal AI chatbot **Gemini** with a video demonstrating its ability to recognize pictures.
 - o However, it was later revealed that the video was not shot in real-time but created using text prompts and stitched frames.
- < Other multinational brands like **McDonald's and Coca-Cola** have also faced scrutiny for their AI-related claims.
 - o McDonald's **abandoned its AI technology at drive-thru restaurants due to customer complaints, while Coca-Cola's AI-generated flavour failed to impress consumers.**

Way Forward:

- < To combat AI washing, businesses need to maintain transparency and accuracy in their AI product claims.
 - o **The US Federal Trade Commission (FTC)** recommends that businesses critically evaluate their AI product claims to avoid exaggeration and misrepresentation.

PEPPER IT WITH:
Greenwashing, SEBI, ChatGPT

- The FTC advises companies to ask key questions such as: **"Are you exaggerating what your AI product can do? Are you promising that your AI product performs better than a non-AI product? Does the product actually use AI at all?"**
- ◁ **The Securities and Exchange Board of India (SEBI)** cautioned against AI washing in a 2019 circular, **emphasizing the need for accurate representation of financial benefits claimed by AI technologies.**

INTERNAL SECURITY

Enemy Agents Ordinance

News Excerpt:

Jammu and Kashmir's Director General of Police (DGP) emphasized the need for stringent measures against those assisting militants in the region, **advocating for the use of the Enemy Agents Ordinance, 2005.**

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What is the Enemy Agents Ordinance?

- It was initially **introduced in 1917** by the Dogra Maharaja of Jammu and Kashmir.
 - It retained the **title 'ordinance'** as per the nomenclature of laws during the Dogra rule.
- After the 1947 Partition, **this ordinance was incorporated into the legal framework of the then-state of Jammu and Kashmir and subsequently amended.**
- Significant changes occurred in 2019 with the **abrogation of Article 370**, which led to the Jammu and Kashmir Reorganization Act.
- **This act restructured the region's legal framework, retaining the Enemy Agents Ordinance and other security laws like the Public Safety Act** while replacing the Ranbir Penal Code with the Indian Penal Code and extending various Indian laws to Jammu and Kashmir.

Key Provisions of the Ordinance:

- **Scope of Punishment:**
 - The ordinance mandates severe penalties for those found guilty of aiding the enemy, including death, life imprisonment, or rigorous imprisonment for up to 10 years, plus fines.
- **Trial Process:**
 - Trials under this ordinance are conducted by a special judge appointed by the government in consultation with the High Court.
 - **The accused can only engage a lawyer if permitted by the court.**
- **Appeal and Review:**

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- There is **no provision for appeal against the verdict of the special judge.**
- However, **the decision can be reviewed by a judge selected by the government from the High Court, whose decision is final.**
- **Confidentiality:**
 - The ordinance **prohibits the disclosure or publication of information related to proceedings under it.**
 - Unauthorized disclosure can result in up to two years of imprisonment, a fine, or both.

Necessity and Rationale:

- The Enemy Agents Ordinance remains crucial for the region's security, especially given the ongoing militancy.
- According to the DGP, **those supporting militants should face stringent legal consequences under this ordinance, reflecting the need for robust measures to maintain law and order.**

Application and Historical Cases:

- The ordinance has been applied to numerous cases involving Kashmiris accused of aiding militants.
- One notable case is that of **Jammu Kashmir Liberation Front founder Maqbool Bhat, who was tried and executed under this ordinance in 1984.**

Way Forward:

- The Enemy Agents Ordinance, with its stringent provisions and severe penalties, serves as a vital tool in Jammu and Kashmir's efforts to **combat militancy and maintain security.**
- Its **historical roots and contemporary application** underscore its importance in the region's legal framework despite the significant legal transformations following the abrogation of Article 370.

PEPPER IT WITH:
 Rehman Shagoo vs State of Jammu and Kashmir Case, Unlawful Activities Prevention Act

Why is militancy on the rise in Jammu?

News Excerpt:

The recent terrorist attacks in Jammu and Kashmir (J&K) underscore a **troubling shift in militant focus from the traditionally volatile Kashmir Valley** to the relatively peaceful Jammu region.

Background:

- Jammu and Kashmir have long been a hotspot of militant activity, with the **Kashmir Valley being the epicentre** of insurgency for decades.
- However, in recent years, a noticeable shift has occurred, with militants increasingly **targeting the Jammu region.**
- This shift can be attributed to several factors, including **increased security presence and intelligence**

operations in the Valley, which have made it more difficult for militants to operate there.



- Additionally, the strategic importance of Jammu as a **gateway to the rest of India** makes it an attractive target for militants seeking to disrupt normalcy and instil fear.

Is a new pattern emerging?

- The attacks follow a pattern that suggests concerted attempts to revive militancy in the Jammu region over the past three years — **in the Chenab Valley comprising Doda, Kishtwar, Ramban, Kathua, Udampur, and Reasi districts and south of the Pir Panjal comprising Rajouri and Poonch districts.**
- The resurgence of militant activity in the Jammu belt, which has remained free of such incidents in the past two decades, has sent alarm bells ringing among the security establishment.
 - This region was a hotbed of militancy in the **late 1990s and the early 2000s.**
- These incidents are not isolated; they are part of a **broader pattern** of escalating violence aimed at destabilizing the region and undermining public confidence in the government’s ability to maintain security.

What does the data show?

- Since 2021, the Jammu region has witnessed **31 terror incidents** in which we lost 47 security personnel and 19 civilians other than 48 terrorists who were killed in various encounters.
- The Kashmir Valley, meanwhile, **reported 263 terror incidents** in which we lost 68 security personnel and 75 civilians.
 - As many as 417 alleged terrorists have also been killed in the Valley since 2021.
- A plain reading of numbers shows that incidents in Jammu remain far fewer than in the Valley, yet it is the **frequency and the nature of attacks** targeting pilgrims and security forces that is worrying.

What could be the possible reasons?

- After the 2020 Galwan clashes in eastern Ladakh, in which 20 soldiers were martyred, **a large contingent of the Army was pulled out of Jammu and deployed along the China border.**
 - This led to the thinning of the security grid, making the area vulnerable, pointed out security experts.
 - Inimical elements in the neighborhood want to engage and exhaust India at both fronts — **the western (Pakistan) and northern (China) borders as part of a design.**
- As there is a heightened state of alert in the Kashmir Valley and little leegroom for state-sponsored terrorists, it is convenient to launch terror attacks in Jammu, where the guard is relatively down.
- Post-reading of Article 370 in J&K in August 2019, and based on indicators such as zero stone-throwing events, no strikes, and a boom in tourism, the government has claimed huge success in the Kashmir Valley in terms of the overall security scenario.
 - **Reviving terrorism in Jammu upsets this narrative.**
 - Another possibility is that [militants are trying] to stabilize cadres in the Kashmir Valley while they take up insecurities in Jammu.
- The demography of the area is such that the **attacks could flare up communal tensions too**, leading to social unrest.
 - The **diverse and often difficult terrain** of Jammu and Kashmir poses a significant challenge for security forces.
 - The **dense forests, mountainous regions, and porous borders** with Pakistan provide militants with ample hiding spots and routes for infiltration.

Implications of these attacks:

They indicate a need for the government to **adapt its security strategies** to address the changing dynamics of militant activities.

They underscore the **importance of community engagement and cooperation** in countering terrorism.

They highlight the **necessity of addressing the underlying socio-economic issues** that often fuel militancy.

How is the infiltration happening?

- The 192-km **international border (IB)** along Jammu is secured by the **Border Security Force (BSF)**, while the 740-km **Line of Control (LoC)**, the effective border in the Kashmir Valley and parts of Jammu, is under the operational control of the **Army**.
- Officials said though measures are in place, **tough terrain and forested areas** along the LoC and **vulnerable patches** along the IB may have been used for fresh infiltration.

Way Forward:

- **Building and maintaining trust between security forces and local communities** is crucial. In many cases, militants exploit local grievances and mistrust of authorities to gain support and cover.
- The role of **external actors**, particularly Pakistan, in supporting and abetting militant activities in J&K cannot be overlooked. **Cross-border terrorism** remains a persistent threat, necessitating robust border security measures and **international diplomatic efforts to hold accountable** those who provide sanctuary to militants.
- **Strengthening intelligence capabilities** is paramount. This includes investing in advanced surveillance technologies, enhancing human intelligence (HUMINT) networks, and fostering greater inter-agency coordination.
 - In 2003, the Army launched **Operation Sarp Vinaash** near Hilkaka in the Poonch sector. In the aerial attacks, more than 60 terrorists, who had entrenched themselves in bunkers and trenches in the forest, were killed.
- **Real-time intelligence** sharing between various security agencies can significantly improve response times and operational effectiveness.
 - Given the role of cross-border infiltration in sustaining militancy, enhancing border security is crucial. This includes deploying advanced surveillance systems, increasing border patrols, and fortifying vulnerable points along the Line of Control (LoC) and the International Border (IB).
- **Development programs** that focus on education, employment, and infrastructure can provide alternative pathways for the youth, reducing their susceptibility to militant recruitment.
- Addressing the ideological roots of militancy is essential for long-term peace. **Counter-radicalization programs** that promote moderate religious teachings, interfaith dialogue, and community resilience against extremist ideologies can help prevent the spread of radicalism.

PEPPER IT WITH:
 PARVAAZ scheme, Himayat program, Udaan initiative, Nai Manzil program, USTAAD scheme

- **Establishing and equipping specialized counter-terrorism units** with advanced training and technology can improve the ability to conduct precise and effective operations against militants. These units should be capable of rapid deployment and equipped to handle a variety of scenarios.
- **Proactive measures**, such as conducting regular security drills, maintaining high alert levels, and conducting thorough searches at checkpoints, can deter militant activities. Preemptive measures, such as disrupting militant financing networks and arresting key operatives before they can execute attacks, are equally important.

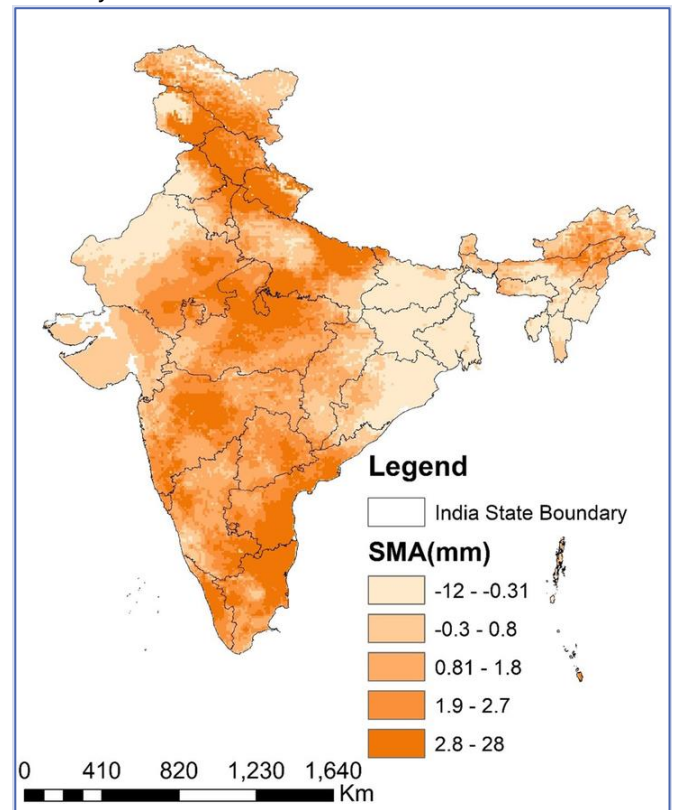
GEOGRAPHY

Soil Moisture Anomalies (SMAs)

News Excerpt:

A new study has revealed that **about 32.8% of India's land area** experienced a negative Soil Moisture Anomaly (SMA) in 2023.

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Soil Moisture Anomalies

- It refers to **deviations from the normal** or average soil moisture levels typically observed over a specific period in a particular region.
- These anomalies can be either positive or negative:
 - **Positive Soil Moisture Anomaly:** Indicates that the soil moisture level is **higher** than the historical average. This can lead to conditions such as **waterlogging and increased risk of flooding**.

- **Negative Soil Moisture Anomaly:** Indicates that the soil moisture level is **lower** than the historical average. This can lead to conditions such as **drought stress, reduced agricultural productivity, and water scarcity.**
- Soil moisture anomalies are critical for understanding and managing water resources, agricultural productivity, and ecosystem health.
- They help in **predicting and preparing for extreme weather events**, such as droughts and floods, and are essential for developing sustainable water management and agricultural practices.

More about the study:

- The study underscores the importance of understanding soil moisture content for **comprehending climate interactions.**
- It is the **first detailed state-wise assessment** of seasonal, pre-monsoon, monsoon, and post-monsoon SMAs.
- The study, titled "**Unearthing India's Soil Moisture Anomalies: Impact on Agriculture and Water Resource Strategies,**" analyzes soil moisture changes in 2023 compared to historical averages from 2000 to 2005.
- Using soil moisture data at depths of 0 to 10 cm, researchers found **that fluctuations in soil moisture levels directly impact** crop yields, water availability, and food security, posing unique challenges across India's various climatic zones.

This anomaly, covering approximately 1.08 million square kilometres, indicates a vulnerability to drought stress.

Major Findings of the Study:

- **47.7%** of India's geographical area saw soil moisture levels **exceeding** historical averages, resulting in wetter conditions over about 1.57 million square kilometers.
 - This **positive anomaly** raises the risks of flooding and waterlogging in both rural and urban areas.
- The study highlights the potential impact of these conditions on agricultural productivity and water resource management.
- The findings stress the **need for tailored water management policies** to optimize agricultural productivity and improve climate resilience across different regions of India.

Regional disparities across different seasons:

- Between **June and September**, significant soil moisture deficits of 2.1 mm over 498,677 square kilometres were recorded, necessitating water conservation measures.
- Conversely, from **December to February**, Punjab experienced positive soil moisture anomalies ranging from 1.19 mm to 8.75 mm, boosting agricultural productivity during the winter months.

- The researchers suggest **utilizing positive SMAs** for winter crops to reduce the need for surplus irrigation.
- In contrast, Odisha experienced a negative SMA of 0.59 mm, **indicating drier conditions** than historical averages.
 - The study recommends that Odisha adopt efficient irrigation techniques and water conservation practices from Punjab to mitigate these deficits.
- It also suggested the need for different approaches to address the disparities.
 - For instance, **rice paddies in West Bengal require different water management strategies** than wheat fields in Punjab, and techniques suitable for farms in Gujarat may not work for rain-fed fields in Odisha.

Way Forward:

- SMA analysis can **help improve the effectiveness** of water management and agricultural practices.
- The study **recommends developing policies tailored to distinct soil moisture conditions** in each region, such as preparing drought management plans for deficit areas and flood management strategies for surplus moisture areas.
- Additionally, **investing in advanced soil moisture monitoring systems** using remote sensing and ground-based sensors will provide real-time data, enhancing the ability to make informed decisions quickly.

PEPPER IT WITH:
Water stress, Falkenmark Indicator

Deep-Drilling Research

News Excerpt:

India's Mission is to drill a 6-km deep hole in Koyna, Maharashtra.

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Objectives:

- The objective of India's scientific deep-drilling Mission is to study earthquakes, **especially reservoir-triggered earthquakes** in the Koyna-Warna region.
- This region has experienced **frequent earthquakes since the impoundment of the Shivaji Sagar Lake in 1962.**
- The Koyna Dam is the most outstanding example of **Reservoir Triggered Seismicity (RTS)**, where triggered earthquakes have been occurring in a **restricted area of 20x30 sq km** since the impoundment.
- The Borehole Geophysics Research Laboratory (BGRL) is **spearheading this Mission under the Ministry of Earth Sciences.**

Significance:

- Scientific deep drilling involves **strategically digging boreholes** to observe and analyze deeper parts of the Earth's crust.
- It **offers unparalleled opportunities** to study earthquakes, rock types, energy resources, life forms, climate change patterns, and more.
- Countries like the **U.S, Russia, and Germany** have conducted such projects, and **China** recently started a similar mission in 2023.

Kola Superdeep Borehole, the deepest man-made hole on Earth and **the deepest artificial point** on Earth is 12.2km in Russia.

Importance of the Koyna Project

- This project is unique because it focuses **on studying reservoir-triggered earthquakes in an active fault zone.**
- The recurrent earthquakes in Koyna are **linked to the loading and unloading of the Koyna Dam during the monsoon and post-monsoon periods.**
- This provides a unique opportunity to understand **earthquake mechanisms better** and use the resulting knowledge for scientific and public good.

Methodology and Challenges

- The pilot borehole in Koyna was completed at a depth of 3 km, and a **hybrid drilling technique** was used, combining mud rotary drilling and percussion drilling (air hammering).
- This approach was necessary to navigate the **complex geological conditions**, including fractured rocks and fault zones.
- Deep drilling is **labour-intensive and expensive**, requiring advanced tools, equipment, and highly skilled personnel.

The Koyna project has already yielded significant insights

- It revealed **ancient Deccan trap lava flows and granitic basement rocks**, providing new information about the subsurface geological environment.
- The borehole has enabled **downhole measurements of core samples** and conditions, offering valuable data on rock properties, fluid composition, temperature, and stress regimes.
- One remarkable discovery was the **presence of meteoric water down to 3 km**, indicating deep percolation.
- The region was found to be **critically stressed**, suggesting that even small stress perturbations could trigger frequent, small-magnitude earthquakes.

Way Forward:

- The Koyna data and samples have the **potential to facilitate** new experiments and research.

- Collaborative projects could explore emerging fields like **carbon capture and storage in the deep Deccan traps**, helping mitigate climate change.
- ◁ Despite the challenges, the project is establishing a firm footing for **scientific deep-drilling in India**, with broad implications for understanding earthquakes and other geological phenomena.
- ◁ The deep borehole investigations will also provide insight into **Deccan volcanism and Mass Extinction; Thermal structure and state of stress** in the lithosphere; Geothermal potential of the West Coast Belt as well as Geothermal Record of Climate Change in the region.

PEPPER IT WITH:
Geology, Volcano, Composition of Earth, Tectonic Plates

DISASTER MANAGEMENT

Disaster Resilience in India's Critical Infrastructure

News Excerpt:

The recent unprecedented **surge in electricity demand** highlights the stress **critical infrastructure** faces from **extreme weather** events and **resultant disasters**.

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More details about the news:

- Recently, **Delhi** experienced relentless **high temperatures**, causing **electricity demand** to break records repeatedly.
- This unusual demand led to **frequent power cuts** in Delhi and neighbouring areas, with **central and eastern India** facing similar or worse situations.

About Critical Infrastructure:

- It refers to the **systems, facilities and assets** that are vital for the functioning of society and the economy.
- These infrastructures are considered essential because their **disruption would impact public safety, security and health or economic stability.**
- Critical infrastructure includes both **physical and virtual components** that are interconnected and interdependent.

Building resilience in infrastructure

- **Power systems** aren't the only ones vulnerable to extreme weather. **Telecommunications, transportation, health services, and cyber systems** also face disruptions during disasters, complicating crisis management.
- The **breakdown of essential and emergency services** not only hampers relief efforts but also **amplifies risks and exacerbates devastation.**

- **Building resilience in critical infrastructure** to withstand extreme events and disasters is crucial for **climate change adaptation**.

Mounting losses

- **Early warnings:** While **early warnings and quick response** have significantly reduced human casualties in disasters, economic and other losses from extreme weather events and disasters have been rising. This is mainly due to the increase in frequency and intensity of such events.
 - Government data show that in the five years between **2018 and 2023, states together spent more than Rs 1.5 lakh crore** on dealing with the aftermath of disasters and natural calamities.
 - This is just the immediate expenditure. **Long-term costs**, in terms of livelihood losses for example, or because of a reduction in the fertility of agricultural land, are much bigger and projected to worsen over time.
- **World Bank report:** A 2022 World Bank report projected that the decline in productivity due to **heat-related stress** could take away around **34 million jobs in India by 2030**.
 - Just the **food wastage**, on account of transporting food items in non-air-conditioned trucks and containers, was already worth about **\$9 billion annually**.
- **Damage caused to critical infrastructure:** The damage caused to critical infrastructure like **transportation, telecommunications, and power supply** by disasters and extreme weather events is often not counted in **government figures, particularly when these services are privately owned**. But this damage causes massive disruptions and makes the disaster worse.

Incorporating resilience:

- **Disaster Management Plans**
 - Almost **all infrastructure sectors** now have **disaster management plans** to prepare for and respond to these events.
 - For instance, **hospitals** in disaster-prone areas are equipping themselves with backup power supplies, **airports** and **railways** are taking steps to prevent or quickly drain waterlogging, and **telecommunication lines** are being taken underground.
- **Current Status of Infrastructure**
 - Despite these efforts, progress has been slow, and much of **India's infrastructure** remains extremely **vulnerable to disasters**.
 - In a pioneering exercise in **Odisha**, a state **highly susceptible to cyclones**, the **Coalition for Disaster Resilient Infrastructure (CDRI)** studied the **electricity transmission and distribution infrastructure**.

- The study, published last week, found the **state's infrastructure extremely fragile**. Similar vulnerabilities likely exist in other coastal states.
- However, only a **few Indian states** have sought **CDRI's expertise and collaboration**.

Way Forward:

- **India** is still **developing its infrastructure**, with much of the **proposed infrastructure for 2030** yet to be built.
- **Incorporating disaster resilience** during construction is easier and more **cost-effective** than retrofitting later.
- All **upcoming infrastructure projects** need to be **climate-smart, energy-efficient,** and **resilient to disasters**.
- Having initiated the **creation of CDRI for global benefit**, India needs to set the **standard for resilient infrastructure** capable of withstanding multi-hazard disasters.

PEPPER IT WITH:
Disaster Management Act of 2005, Sendai Framework for Disaster Risk Reduction, Hyogo Framework for Action

Coalition for Disaster Resilient Infrastructure (CDRI)

- It was **founded in 2019** by the **Government of India** with the help of **The United Nations Office for Disaster Risk Reduction (UNDRR)**.
- It aims to make **critical infrastructure resilient to natural disasters**.
- Its **headquarters** is in **India**.
- Over **30 countries** are now **part of this coalition**, working with CDRI to strengthen their infrastructure.
- The following are CDRI's **strategic priorities**:
 - **Technical Support and Capacity-building:** This includes disaster response and recovery support; innovation, institutional and community capacity-building assistance; and standards and certification.
 - **Research and Knowledge Management:** This includes collaborative research, global flagship reports, and a global database of infrastructure and sector resilience.
 - **Advocacy and Partnerships:** This includes global events and initiatives; marketplace of knowledge financing and implementation agencies; and dissemination of knowledge products.

Why stampedes take place

News Excerpt:

At least 121 people were killed in a stampede during a religious gathering in Uttar Pradesh's Hathras district.

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What is a stampede?

- A stampede is defined as “an **impulsive mass movement** of a crowd that often results in injuries and deaths”.
- According to experts, a stampede can be described as the “**disruption of the orderly movement of crowds leading to injuries and fatalities**”, often “in response to a perceived danger, loss of physical space”, or “a will to attain something seen as gratifying”.

Why do stampedes kill?

- **Main Cause:** Traumatic asphyxia due to external compression of the thorax and/or upper abdomen. Other Causes include:
 - Myocardial infarction (heart attack)
 - Direct crushing injury to internal organs
 - Head injuries
 - Neck compression
- **Crowd Size:** Even moderate crowds of six to seven people pushing can generate lethal compression forces.

How does human psychology lead to stampedes?

- **Stampedes in Mass Gatherings:** Stampedes often occur during large gatherings, either **spontaneous** (e.g., metro stations) or **planned** (e.g., religious events).
- **Role of Panic:** Panic is a key trigger or exacerbating factor in stampedes. Psychologists theorize that **cooperation is crucial in panic situations**, but once disturbed, individuals revert to self-preserving behaviours, like pushing.
- **Sociologist Neil J Smelser’s Craze:** Some stampedes are triggered by a “craze” — a **collective mobilization based on a positive, often irrational belief**, which influences the group to act against individual interests. In Hathras, people rushed to touch a preacher’s feet and collect soil, leading to a stampede.

How does the physical organization of spaces contribute to stampedes?

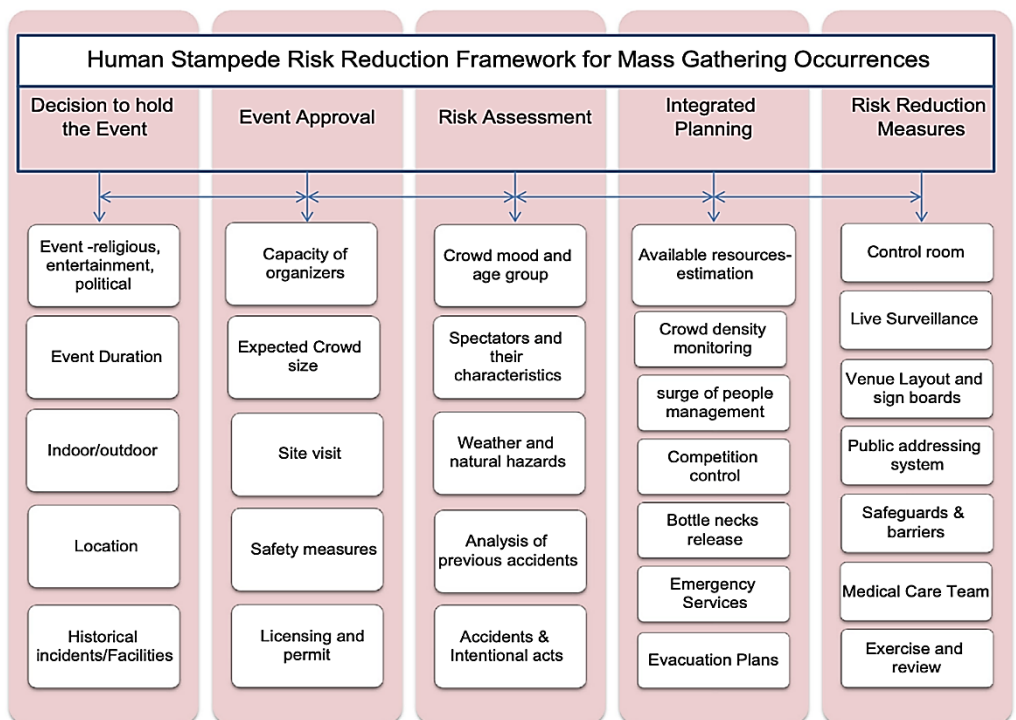
- These include:
 - Lack of light
 - Crowd flow not being divided for different crowds
 - Collapse of barriers, buildings
 - Blocked exits, evacuation route
 - Poor design of hardware (such as a revolving door at the entrance)
 - Fire hazards

- Another related factor to consider for designers and event organizers is the **dynamics of the crowd’s likely movement**.
- Researchers classify two types of stampedes based on movement: **unidirectional or turbulent**.
 - **Unidirectional stampede** events may occur when a crowd moving in the same direction encounters a sudden positive or negative change in force, which alters its movement.
 - A positive force can be a “**sudden stop**” situation, like a bottleneck and blocked exit,
 - Whereas a negative force would be something like a broken barrier or column that sends a group of people tumbling.
 - **Turbulent stampede** events can occur in situations with uncontrolled crowds, induced panic, or crowds merging from numerous directions.

Way forward:

- **Limit Entry:** Ideally, restrict the number of people entering a contained space.
- **Number and Placement of Exits:** Ensure sufficient and well-placed exits.
- **Event Organizers’ Vigilance:** Maintain vigilant monitoring and real-time preventive interventions.
- **Inter-Agency, Multi-Disciplinary Planning:** Plan for mass gatherings with a collaborative approach, identifying hazards and executing mitigation measures.

PEPPER IT WITH:
 National Disaster Management Authority, Radio Frequency Identification (RFID)



- **Live Surveillance:** Monitor crowd pressure buildup, density increases, bottlenecks, and disturbances in real time to manage crowds effectively.
- **Effective Communication:**
 - **Between Organizers:** Ensure clear communication among different bodies and organizations involved (e.g., temple authorities, local administration, police).
 - **With the Crowd:** Prepare for situations requiring warnings, designating who will issue the warning and how it will be communicated to the crowd.

ART & CULTURE

Private Papers of Public Figures

News Excerpt:

The **Prime Ministers' Museum & Library (PMML)** has decided that it will not permit future donors of Private Papers of eminent personalities to impose indefinite conditions on the declassification of such material.

GS CONNECT														
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Typically, there is a five-year embargo from the date of receipt, extendable to ten years in rare cases.

What are Private Papers?

- Private Papers are **documents originating from individuals, such as a Prime Minister or other public figures**, that survive their passage through various conditions to reach a repository like the Prime Ministers' Museum & Library (PMML).
- They include **correspondence, personal notes**, and other materials of historical significance.
- Personal papers are different from Private papers.
 - These **are the documents held in a personal capacity and are not included in these collections.**
 - **Official Records is another category that is held by government departments.**

Nehru's Papers at PMML

- The first set of Private Papers obtained by PMML were those of **Jawaharlal Nehru**, transferred by the Jawaharlal Nehru Memorial Fund starting from 1971 on behalf of Nehru's legal heir, Indira Gandhi.
- Sonia Gandhi handed over more of Nehru's post-1946 papers after the demise of Indira Gandhi.

Other Collections at PMML

- **PMML holds the largest collection of Private Papers in India**, including those of Mahatma Gandhi, B R Ambedkar, and others.
- Recent acquisitions include papers of **Shanta Kumar and environmental activist Sundarlal Bahuguna.**

Donor Conditions

- Donors sometimes impose conditions on the declassification of Private Papers, which can restrict public access.
- **PMML's new policy aims to limit such embargoes to five or ten years to make the collections accessible to researchers.**

Other Organizations:

- **The National Archives of India** also acquires Private Papers but ensures they are declassified unless concerns about security or sensitivity arise.
- Their collections include papers of prominent figures like Mahatma Gandhi and Dr Rajendra Prasad.

Declassification in Other Countries

- In the US, **the Library of Congress and the National Archives and Records Administration handle similar tasks.**
- In India, **the Public Records Rules, 1997, covers the declassification of official records, usually after 25 years, but do not apply to private papers, which are governed by donor agreements.**

Way Forward:

- The PMML and the National Archives of India play crucial roles in **preserving and providing access** to Private Papers of public figures, governed by specific declassification rules to balance privacy, security, and public interest.
- There is a **need for more clear rules** for private papers to avoid any conflicts in future as it plays a significant role in research works.

PEPPER IT WITH:
Public Records Rules, 1997, Personal Papers, Private Papers

Prime Ministers Museum and Library (PMML)

- On 1 April 1966, the Government set up the Prime Minister Museum and Library.
- It is an **autonomous Body Under the Ministry of Culture**, Government of India and is dedicated to the **objective of promoting advanced research on Modern and Contemporary India.**
- The Prime Ministers Museum and Library is housed in the historic **Teen Murti campus** located south of Rashtrapati Bhavan in New Delhi, the capital city of India.
- The central government has renamed the Nehru Memorial Museum and Library (NMML) as PMML on India's 77th Independence Day.

PRE-SHOTS
POLITY

NITI Aayog Reconstituted

News Excerpt:

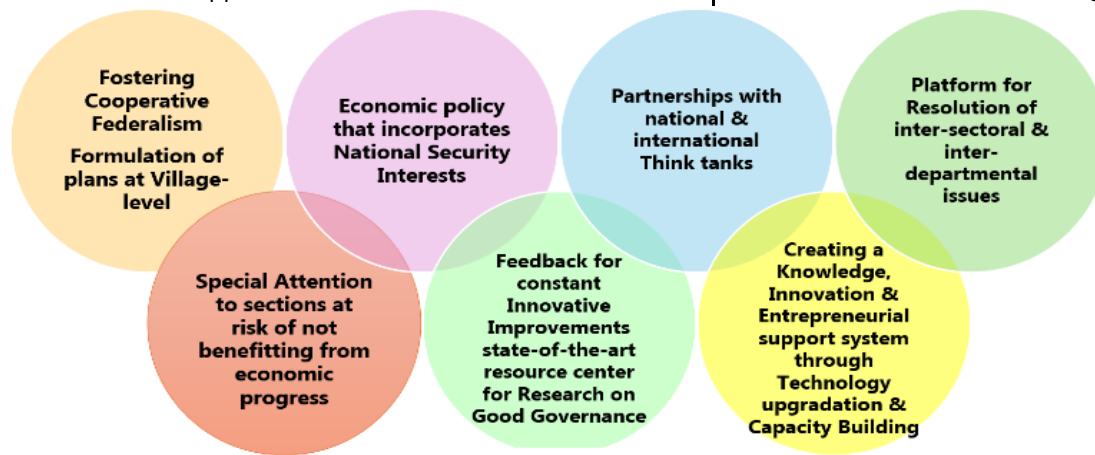
Recently, the **NDA government** restructured the **NITI Aayog**, incorporating **four full-time members** and **15 Union Ministers**, including allies from the BJP, as either ex-officio members or special invitees.

More about the news:

- ◁ According to an official notification, the **Prime Minister** retains his role as **chairperson**, while economist **Suman K. Bery** continues as **vice-chairperson**.
- ◁ The NITI Aayog will also retain **scientist V.K. Saraswat**, **agricultural economist Ramesh Chand**, **paediatrician V.K. Paul**, and **macro-economist Arvind Virmani** as **full-time members**.
- ◁ The **ex-officio members** include:
 - **Rajnath Singh** (Defence Minister),
 - **Amit Shah** (Home Minister),
 - **Shivraj Singh Chouhan** (Agriculture Minister),
 - **Nirmala Sitharaman** (Finance Minister).

About NITI Aayog:

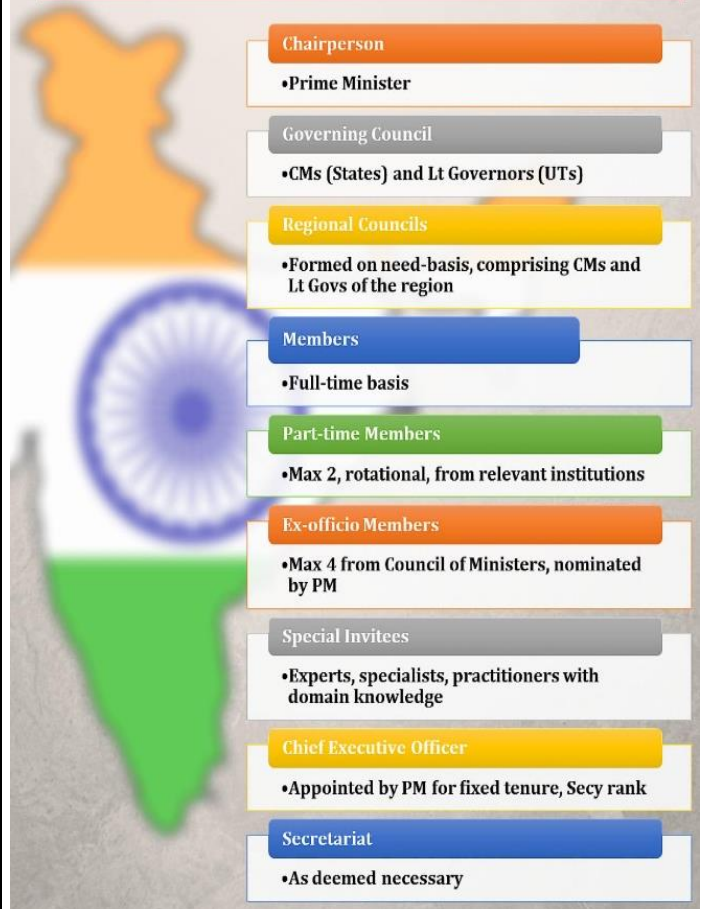
- ◁ The **National Institution for Transforming India**, better known as **NITI Aayog**, was **established in 2015** after the Modi government dissolved the 65-year-old **Planning Commission**.
- ◁ NITI Aayog offers **strategic and technical advice** to **central and state governments** on key policy elements, including national and international economic issues, the dissemination of best practices from India and abroad, the infusion of new policy ideas, and specific issue-based support.



OBJECTIVES OF NITI AAYOG

- ◁ NITI Aayog is based on the **7 Pillars of Effective Governance**:
 - **Pro-people agenda**: Meeting the aspirations of society and individuals.

Composition of #NITIAayog



- **Pro-active approach**: Anticipating and responding to needs.
- **Participative governance**: Involving citizens.
- **Empowerment of women**: In all aspects.
- **Inclusion of all groups**: Focusing on the economically weak, SC, ST, and OBC communities, the rural sector and farmers, youth, and minorities.
 - **Equality of opportunity**: For the country's youth.
 - **Transparency**: Using technology to ensure government visibility and responsiveness.

◁ NITI Aayog **consists of the following components**:

The Telecommunications Act, 2023

News Excerpt:

The Union Government issued a Gazette Notification to enforce some key sections of the **Telecommunications Act of 2023**.

Significance of the Act:

- < Aims to modernize the telecommunications sector, replacing the **archaic Indian Telegraph Act of 1885** and the **Indian Wireless Telegraph Act of 1933**.
- < This is in line with **significant technological advancements** in the field of **telecommunications**.
- < Guided by the principles of **Samavesh** (Inclusion), **Suraksha** (Security), **Vridhhi** (Growth), and **Tvarit** (Responsiveness).
- < **Aligns with the vision of Viksit Bharat (Developed India)**.

Key Provisions of the Telecommunications Act, 2023:

- **Clear Definitions:**
 - Provides precise definitions of various terminologies, reducing uncertainties and enhancing investor confidence, thus promoting ease of doing business.
- **Right of Way (RoW) Framework:**
 - Introduces an effective RoW framework for both public and private properties.
 - Public entities, including government agencies, local bodies, and PPP projects like airports, seaports, and highways, are obligated to provide RoW except in special circumstances.
 - **Fees for RoW will be capped, and telecommunication infrastructure will be distinct from the property it is installed on**, minimizing disputes when properties are sold or leased.
- **Common Ducts:**
 - Aligned with PM Gati Shakti's vision. It empowers the Central Government to establish common ducts and cable corridors.
- **Telecommunication Standards:**
 - To ensure national security and promote Indian technology, the Act grants powers to set standards and conformity assessment measures for telecommunication services, networks, and security.
- **National Security and Public Safety:**
 - Strong provisions are included to take necessary measures for national security and public safety.
 - Providing telecom services without authorisation or gaining unauthorized access to a telecom network or data are punishable with imprisonment of up to three years, a fine of up to two crore rupees, or both.
 - Breaching terms and conditions of authorisation is punishable with a civil penalty of up to five crore rupees.
 - Possessing unauthorized equipment, or using unauthorized network or service, is punishable with a penalty of up to ten lakh rupees.

● Inclusive Service Delivery, Innovation, and Technology Development:

- **The Act expands the scope of the Universal Service Obligation Fund to support services in underserved areas and to fund research and development of telecommunication technologies.**
- It also establishes a legal framework for a **Regulatory Sandbox to foster innovation and deployment of new technology.**

● User Protection:

- To prevent misuse of telecommunications, the Act includes **measures to protect users from unsolicited commercial communication and establishes a grievance redressal mechanism.**

● Digital by Design:

- **The implementation of the Act will be digital by design, incorporating online dispute resolution and other digital frameworks.**

● Transition Provisions:

- Sections 61 and 62 have been enforced to ensure a **smooth transition, maintaining the existing framework until new rules are established.**

Post Office Act, 2023

News Excerpt:

The **Post Office Act, 2023** came into force on **June 18**.

The objective of the New Act

- The Act aims to **modernize** the laws related to the **Indian Post Office**, reflecting its expanded role **beyond mail delivery** to various **citizen-centric services**.
- The new Act provides a framework for prescribing standards for addressing items, address identifiers and usage of postcodes.

Highlights of the Act:

- **The Act replaces the Indian Post Office Act, 1898 and regulates India Post**, a departmental undertaking of the Central Government.
- The government **will not have exclusive privilege over conveying letters**. Services to be provided by India Post will be prescribed under the Rules.
- The **Director General of Postal Services** will be appointed to head India Post and will have powers to make regulations on various matters including tariffs for services and supply of postage stamps.
- India Post will not incur any liability with regard to its services, except any liability prescribed through Rules.

Authority to Intercept Items:

- **Section 9 of the Act** empowers the Centre to authorize any officer to **intercept, open, or detain any item** for reasons including **state security, foreign relations, public order, emergencies, public safety, or legal contraventions** without issuing any written order.

- It also allows handing over items suspected to contain **prohibited materials** or **liable for customs duty** to the authorities.

Penalty and Offense Removal

- The Act **eliminates all penalties and offences** from the **1898 Act**, such as those for **official misconduct, fraud, and theft**.
- However, it mandates that **unpaid postal service charges** can be **recovered** as arrears of land revenue.

Removal of Exclusivity

- The Act **abolishes Section 4 of the 1898 Act**, which granted the Centre **exclusive privilege to convey letters** by post.
- This exclusivity had effectively ended with the rise of **private courier services in the 1980s**.
- The **new Act regulates private courier services** for the **first time**, allowing the interception and detention of any postal article, not just letters.

Criticism of the Post Office Act:

- Indian Post is **exempt from liability** under the **New Post Office Act** and **Consumer Protection Act, 2019**, whereas **private couriers are liable** under the **Consumer Protection Act**.
- **Does not specify procedural safeguards for the interception of articles transmitted through India Post.**
 - Lack of safeguards may violate freedom of speech and expression, as well as the right to privacy.
- **Grounds for interception include 'emergency'**, which may be beyond reasonable restrictions under the Constitution.
- **Exempts India Post from liability for lapses in postal services.** Liability may be prescribed through Rules by the central government, which also administers India Post. This may lead to conflict of interest.
- **Does not specify any offenses and penalties.** For instance, there are no consequences for the unauthorized opening of postal articles by a postal officer. This may have adverse implications for consumers' right to privacy.

The Public Examinations Act

News Excerpt:

In response to the increasing **incidents of malpractice in public examinations**, the **Ministry of Personnel, Public Grievances and Pensions** has notified **The Public Examinations (Prevention of Unfair Means) Act, 2024**.

Also, the Centre government has removed the chief of the **National Testing Agency (NTA)** from his post.

Key Provisions of the Public Examinations Act:

1. **Parameters for conducting Computer-Based Tests (CBTs):**

- **Registration of Candidates:** Proper protocols for candidate registration.
- **Centre Allocation:** Criteria and procedures for allocating exam centres.
- **Admit Cards:** Guidelines for the issuance of admit cards.
- **Question Paper Management:** Downloading from the main server to the local server and digitally transferring the papers to authorized computers.
- **Evaluation and Recommendations:** Standardized methods for evaluating answers and making final recommendations.
- **The central government's National Recruitment Agency (NRA)** is responsible for **preparing norms, standards, and guidelines for CBTs in consultation with stakeholders, covering both physical and digital infrastructure, including security measures like biometric registration and candidate screening.**

2. Appointment of Centre Coordinators:

- The Act mandates the appointment of Centre Coordinators for Public Examinations, who can be serving or retired employees of various government organisations, like Central Government, State Government, Public Sector Undertakings, Public Sector Banks, Government Universities, autonomous bodies and other Government Organisations.
- The Centre Coordinator acts as **the representative of the public examination authority**, ensuring compliance with all norms, standards, and guidelines and coordinating activities among various service providers.

3. Reporting and Investigation Framework:

- **Venue In-Charge Reporting:** The person in charge at the examination centre must prepare a report if any unfair means are detected, and send it to the **Regional Officer through the Centre Coordinator**.
- **First Information Report (FIR):** If a prima facie case is made, **the venue in charge is responsible for filing an FIR**.

Rationale and Impact of the Act:

- The recent controversy over paper leaks in examinations like NEET UG has underscored the need for such legislation.
 - These disrupt the recruitment process for government jobs, affecting millions of applicants.
- The act will address these vulnerabilities by:
 - Ensuring a fair examination system and providing a sense of security and fairness to the youth.
 - Establishing a robust framework to prevent the use of unfair means in public exams and **ensure transparency, fairness, and credibility in the examination system.**

- **Serving as a model for states to adopt similar measures to combat examination malpractices.**

About the National Testing Agency (NTA):

- NTA was established (2017) as a premier, specialist, autonomous, and self-sustained testing organization that conducts entrance examinations for admission/fellowship in higher educational institutions.
- The NTA is entrusted to address all such issues using best in every field, from **test preparation, to test delivery and to test marking.**
- **Objectives:**
 - To conduct efficient, **transparent and international standards tests** in order to assess the competency of candidates for admission and recruitment purposes.
 - To undertake **research on educational, professional, and testing systems** to identify gaps in the knowledge systems and take steps to bridge them.
 - To **identify experts** and institutions in setting examination questions.

To **produce and disseminate information and research** on education and professional development standards.

More details about the news:

- The **Ministry of Personnel** announced that **Subodh Kumar Singh**, who was the director general of the NTA, has been replaced by retired Indian Administration Service (IAS) officer **Pradeep Singh Kharola**.
- **Mr Kharola** is the Chairman and Managing Editor of the **India Trade Promotion Organisation** and has been given additional charge as the director general of the NTA "till the appointment of a regular incumbent or until further orders".

Current issues associated with NTA

- Over the past month, the agency has been caught in a string of controversies, starting with the row over **irregularities in NEET-UG**, an entrance test for undergraduate medical programmes.
- This was followed by the **cancellation of the UGC-NET examination for research scholars and university teachers.**
- The government also handed over the probe into the alleged irregularities, including the paper leaks, in the **NEET-UG exam to the CBI.** The agency is probing the alleged leaks that led to the cancellation of the UGC NET exam.
- 1,500 students who had been given grace marks for **NEET-UG are scheduled to take a retest.**

Review committee to reform NTA:

- The government constituted a **seven-member committee** to look at ways of improving the functioning of the NTA.

Unlike the NEET-UG, which was conducted by the NTA, an autonomous body under the Education Ministry, the NEET-PG is conducted by the National Board of

Examinations, an autonomous body under the Health Ministry.

- The panel will be led by **Dr K Radhakrishnan**, a former ISRO chief and the current chairperson of the board of governors of IIT Kanpur and will have former AIIMS director **Dr Randeep Guleria** as one of the members.
- The expert panel has been mandated with assessing the NTA's current grievance redressal mechanism, identifying areas of improvement, and making recommendations for enhanced efficiency.
- It will also make recommendations on the organizational structure of the NTA and clearly define the roles and responsibilities of functionaries at every level.

Supreme Court empowers the Central Information Commission

News Excerpt:

The **Supreme Court (SC)** has affirmed that the **Central Information Commission (CIC)** possesses the authority to constitute **benches and frame regulations.**

More About News:

- The SC emphasized that the CIC must be permitted to **operate independently** and **exercise its powers of superintendence**, direction, and management without external constraints.
- The bench highlighted that the **CIC's ability to allocate work** among **Information Commissioners** is crucial for managing its workload effectively and upholding **citizens' right to information.**
- The court underscored that the **Commission's autonomy** is vital for promoting **transparency and accountability**, which are fundamental to the RTI Act.

The Supreme Court set aside the High Court's order.

- This ruling came as the Supreme Court set aside a **2010 Delhi High Court order**, which had quashed the **Central Information Commission (Management) Regulations, 2007.**
- The **High Court** had ruled that the CIC lacked the power to constitute benches. However, the **Supreme Court's** decision reinstates the **CIC's authority** in this regard.
- The Supreme Court criticized the **Delhi High Court's narrow interpretation** of the provisions, which overlooked the CIC's inherent powers to manage its affairs.

Right to Information Act:

- The court noted that while the **RTI Act** does not explicitly grant the CIC the authority to frame regulations, the broad powers conferred under **Section 12(4) of the RTI Act** inherently include the **ability to manage** the Commission's affairs effectively.

- The bench clarified that under **Section 12(4)**, the CIC has the authority to issue various **administrative guidelines, directives, and instructions** necessary for effective management.
- The court stated that the **RTI Act's broad language** indicates a **legislative intent** to provide the CIC with the necessary authority to implement measures ensuring the **Commission's effective operation**.

Central Information Commission (CIC):

- As per **Section 12 of the RTI Act, 2005**, the Central Government is required to constitute the CIC through a notification in the Official Gazette.
- CIC was established on **October 12, 2005**.
- The Commission comprises the **Chief Information Commissioner (CIC)** and **up to ten Central Information Commissioners**, as deemed necessary.
- Its **jurisdiction covers all Central Public Authorities**.
- The Commission's powers and functions, outlined in **Sections 18, 19, 20, and 25 of the RTI Act**, include:
 - Handling appeals to provide information.
 - Issuing directives for record maintenance and proactive information disclosures and addressing complaints about the inability to file RTI requests.
 - Penalizing non-compliance.
 - Preparing and submitting an Annual Report.
- The **Commission's decisions are final and binding**.

Patna High Court Nullifies Bihar's 65% Quota Increase for Jobs and Colleges

News Excerpt:

The **Patna High Court (HC)** nullified the **Bihar government's decision** to raise **caste-based reservations** from 50% to **65%** in **educational institutions** and **government jobs**, citing the need to balance merit and reparations.

More about News

- The **Bihar assembly** had **unanimously passed bills** to increase the reservation quotas based on the **Bihar Caste-based Survey 2022**.
- The new rules raised the quotas for **SCs to 20%, STs to 2%, EBCs to 25%, and OBCs to 18%**, with a **total of 65%** reserved for these groups.

Bihar Caste-based Survey 2022:

- New Reservation rule is based on the caste-based survey that had revealed that **EBCs and OBCs** together made up **63.13% of the state's population** while **SCs were 19.65%, STs 1.68%, and upper castes 15.52%**.
- Government decided to increase reservations for **SCs, STs, EBCs, and OBCs** after a caste survey

indicated these groups made up **84% of the state's population**.

Patna High Court's Observations:

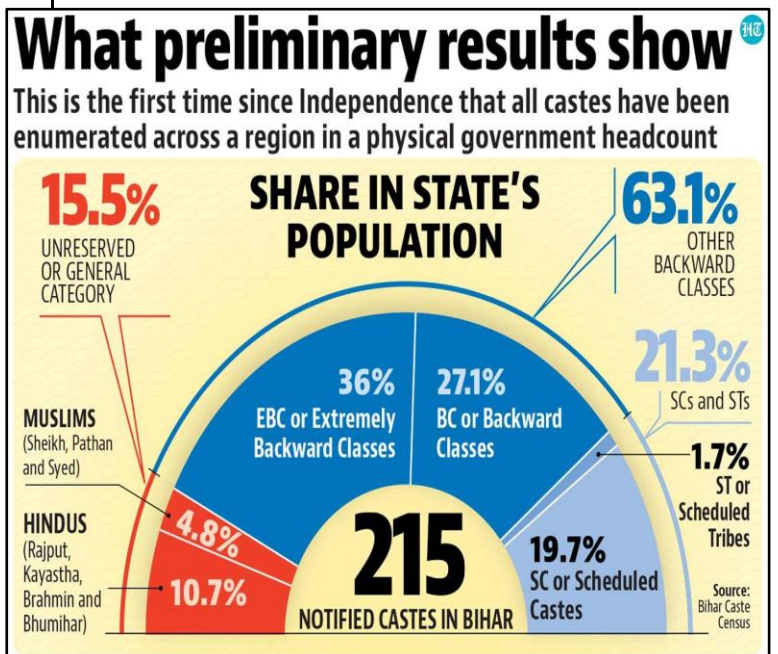
- There is a **lack of scientific analysis** and **detailed study** before implementing the quota increase.
- While addressing **historical injustices** is crucial, it should not **entirely overshadow merit**.
- This quota violated the **Supreme Court's 1992 Indira Sawhney judgment**, which **caps reservations at 50%**.
- It stressed the importance of **excluding the creamy layer** within **backward classes** to ensure equitable distribution of benefits.
- It declared this act **unconstitutional** as it **violates equality provisions** under **Articles 14, 15, and 16**.
- The **backward communities** were already **sufficiently represented in public employment** through existing reservations and merit.

State Government's plan

- The Bihar government plans to **challenge the verdict in the Supreme Court** after seeking further legal consultation.

Previous Example

- The court's decision contrasts with **Tamil Nadu's law**, which provides **69% reservations**, which remains protected due to its **inclusion in the Ninth Schedule** of the Constitution.
- A **Constitution Bench** of the **Supreme Court**, in a **3:2 majority decision**, upheld the validity of the **103rd Constitutional Amendment**, which provides **10% reservation** in government jobs and educational institutions to the **economically weaker sections**.
- The **Supreme court** dismissed the argument that the **10% EWS quota** would breach the **ceiling limit of 50% on reservation**.



Kerala State Assembly Passes Resolution to Rename State to 'Keralam'

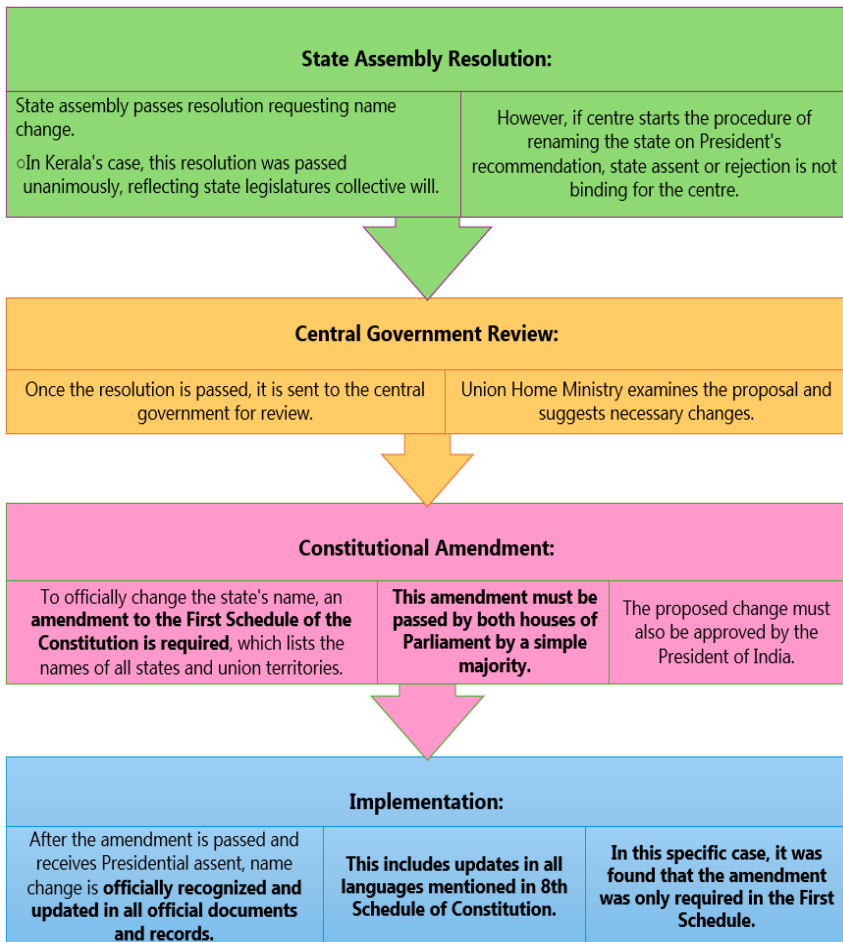
News Excerpt:

The Kerala state assembly has unanimously passed a resolution urging the central government to amend the Constitution to change the state's name from 'Kerala' to 'Keralam.'

More about the news:

- This resolution marks the second attempt, following a review by the Union Home Ministry, which suggested minor changes to the initial proposal.
- The Chief Minister of Kerala moved the resolution and **called for measures under Article 3 of the Constitution to rename the state to 'Keralam' in the First Schedule.**
 - He emphasized that **'Keralam' is the term used in Malayalam and has been a longstanding demand of the Malayalam-speaking community since the national freedom struggle.**

Mechanism Involved in State Name Change:



Background and Significance:

- 'Keralam' is commonly used in Malayalam; official records still refer to the state as 'Kerala.'
 - The resolution aims to address this discrepancy and honour the state's cultural and linguistic heritage.

- The demand for a unified Kerala for Malayalam-speaking communities has been prominent since the national freedom struggle, and **this name change is seen as a step towards recognizing that historical aspiration.**
- The resolution was initially passed on August 9 last year, seeking to have the state's name changed in all languages under the Eighth Schedule.
 - However, upon detailed verification, it was found that the amendment was required only in the First Schedule, leading to the new resolution being brought forward.

Previous state name changes:

- In recent years, there have been several instances of Indian states and cities changing their names.
 - Orissa was renamed to Odisha in 2011.
 - Pondicherry was renamed to Puducherry in 2006.

Motion of Thanks

News Excerpt:

Recently, the **President of India** addressed a **joint session** of both Houses of **Parliament** and highlighted the **government's main policy objectives** and **accomplishments**.

< The Prime Minister replied to the Motion of Thanks on the President's Address to Parliament in the Rajya Sabha.

About Motion of Thanks:

- **Definition:**
 - A formal motion moved in the House, expressing its gratitude to the President for the Address delivered by him/her under **Article 87(1) of the Constitution** to both Houses of Parliament assembled together.
- **Clause (2) of Article 87** mandates that rules regulating the procedures of either House must include **provisions for allocating time to discuss** the matters mentioned in the **President's Address**.
- **Process:**
 - After a copy of the President's Address is laid on the table of the Rajya Sabha, the President's Address is discussed in the House on a Motion of Thanks **moved by a member and seconded by another member of the Ruling Party.**
 - Notice, given in writing, for the Motion of Thanks, is received from the Members through the **Ministry of Parliamentary Affairs** and, after approval of the Secretary-General, included in the List of Business as

per provisions of **Rule 14 of the Rules of Procedure.**

- **Amendments to the Motion of Thanks:** Notices, given in writing, of amendments criticizing the policy of the government, enunciated in the President's address or highlighting the **issues that do not find a mention** are received from the members under **Rule 16**.
 - Amendments may be moved to the Motion of Thanks in such form as may be considered appropriate by the **Chairman**.
- The **Motion of Thanks is put to vote** at the end of the discussion. The House needs to approve it. Otherwise, it will amount to the government's defeat (in the case of Lok Sabha).
- After the Motion has been discussed and adopted by the House, the Legislative Section drafts a letter for the **Chairman to send to the President**, conveying to him the adoption of the Motion by the House.
 - After approval and signature from the Chairman, the letter is sent to the President by **Special messenger**.
 - The President's message conveying his satisfaction is then read in the House if it is in session or published in **Bulletin Part II** if it is not in session.

The first session of the 18th Lok Sabha adjourned sine die

News Excerpt:

The **first session** of the **18th Lok Sabha** concluded indefinitely following the approval of the **Motion of Thanks** on the President's address to the joint session of Parliament.

About:

- A session of Parliament consists of **multiple meetings**, with each day having **two sittings**: a morning sitting from 11 am to 1 pm, and an afternoon sitting from 2 pm to 6 pm.

Adjournment:

- Pauses the work in a sitting for a specified time, which can range from hours to weeks.
- It is carried out by the **presiding officer**.
- **Ends only a sitting**, not an entire session of the House.
- **Does not impact bills** or other pending business, which can be resumed when the House reconvenes.

Adjournment Sine Die:

- **Ending a sitting of Parliament for an indefinite period without setting a date for reassembly.**
- This power lies with the **presiding officer** of the House, who can also reconvene the House before the set date or anytime after an adjournment sine die.

About President's Address:

- The President's Address to both Houses of Parliament assembled together is a solemn and **formal act** under the

Constitution.

- **Articles 86 and 87** of the Constitution pertain to the **President's Address**.
- **Article 86(1)** of the Constitution provides that the **President may address** either the House of Parliament or both Houses assembled together, and for that purpose, require the attendance of members.
 - However, this **provision has never been used** since the Constitution's commencement.
- The President's speech essentially highlights the **government's policy priorities** and plans for the upcoming year.
- The address provides a **broad framework of the government's agenda and direction**.
- According to **Article 87**, the **President addresses both Houses of Parliament on two occasions**.
 - The **first is at the beginning** of the **first session** after each **general election** when the newly elected Lok Sabha convenes for the first time.
 - The **second is at the beginning of the first session of each year**.

Prorogation:

- Once the presiding officer declares that the House has adjourned sine die after completing the session's business, the **President issues a notification to prorogue** the session within a few days.
- Prorogation **ends both a sitting and an entire session of the House**. This is done by the President of India.
- It does not impact bills or any other pending business.

Dissolution:

- The **Rajya Sabha**, being a **permanent House**, cannot be dissolved, but the Lok Sabha can be.
- **Dissolution ends the existing House's life**, necessitating **new general elections**.
- It can happen **automatically** at the **end of its five-year term** or extended term during a national emergency or by the President's decision.
- Once dissolved, **all pending business in Lok Sabha lapses**, except some bills and assurances examined by the Committee on Government Assurances.

Pro-tem Speaker

News Excerpt:

The **new Speaker was elected** during the **18th Lok Sabha's inaugural session** from **June 24 to July 3**.

- ◀ Until a new Speaker is chosen, a **pro-tem Speaker** will be appointed to administer the oath to the newly elected **Members of Parliament (MPs)**.

What is a Pro-tem Speaker?

- The term "**pro-tem**" originates from **Latin**, meaning "**for the time being**."

- He/she is a **temporary speaker** appointed for a short duration to **oversee the proceedings in Lok Sabha** or State Legislatures.
- **Article 94** states that the **Speaker's office** is not vacated until just before the first meeting of the new House following a dissolution.
- Although the **Constitution** does not explicitly mention this role, the '**Handbook on the Working of Ministry of Parliamentary Affairs** outlines the process for **appointing and swearing in a pro-tem Speaker**.
- In the **new Lok Sabha**, the Speaker is elected by a simple majority. Until this election occurs, a **pro-tem Speaker** is temporarily appointed to perform necessary duties.

Selection of the Pro-Tem Speaker:

- **Selected with the consensus** of Lok Sabha or Legislative Assembly members.
- The **most senior member** of the house is appointed to this position. Here, "**seniority**" refers to the **length of membership in the House**, not the age of the member.

Role of pro-tem Speaker:

- **Manage activities** until the permanent speaker is elected.
- The primary duty of the pro-tem Speaker is to **administer the oath** to the new MPs, as stipulated by **Article 99 of the Constitution**.
 - This article mandates that **every MP must take an oath or affirmation** before the President or a designated person before assuming their seat.
- Typically, **three other elected members** of the Lok Sabha are also appointed by the President to facilitate the oath-taking.
- Additionally, the pro-tem speaker **facilitates the election of the new speaker**.
- Once the **new speaker is elected**, the **role of the pro-tem speaker concludes**.

Parliamentary Oath and Its Evolution

News Excerpt:

Before the first session of the **18th Lok Sabha**, newly elected members must take the **oath as Members of Parliament (MP)**, as stipulated in the Constitution.

More about News:

Bhartruhari Mahtab, who was elected from **Cuttack, Odisha**, for a **seventh term** in a row, will be the **first to take the oath** of office before President **Droupadi Murmu** at Rashtrapati Bhavan. The President has designated **Mahtab** as the **Pro-tem Speaker** under **Article 95(1) of the Constitution** until the new Speaker is elected.

When Does an MP's Term Begin?

- A **Lok Sabha MP's five-year term** starts when the Election Commission of India (ECI) **declares the election results**, according to **Section 73 of the Representation of the People Act, 1951**.

- From that date, MPs **gain certain rights** as elected representatives, including receiving their **salary and allowances**.
- Once their term begins, MPs must adhere to the **anti-defection law**, which allows their political party to request the Speaker to disqualify them if they **switch party allegiance**.

Significance of Parliamentary Oath

- To participate in debates and votes in the Lok Sabha, an MP must take their seat by making and **subscribing to an oath or affirmation** as prescribed in the **Constitution (Article 99)**.
- The Constitution also imposes a **financial penalty of Rs 500** for **participating or voting** in House proceedings **without taking the oath (Article 104)**.
- An **exception exists** for individuals who become **ministers without being elected to Parliament**. They have **six months to secure a seat** in either the Lok Sabha or Rajya Sabha, during which **they can participate but not vote in House proceedings**.

Evolution of the Oath

- The **original draft Constitution**, prepared by the **drafting committee** chaired by **Dr. B.R. Ambedkar**, **did not mention God** in any oaths.
- The committee intended that the person taking the oath solemnly promises to bear true faith and allegiance to the Constitution.
- During discussions in the Constituent Assembly, members like **K.T. Shah and Mahavir Tyagi** proposed amendments to include God in the oath.
- **Ambedkar** accepted these amendments, acknowledging that for some, invoking God provides the **necessary moral sanction**.
- The most recent change to the oath came with the **Constitution (Sixteenth Amendment) Act, 1963**, which added the commitment to uphold **India's sovereignty and integrity** based on recommendations from the **National Integration Council**.

The procedure of Taking an Oath?

- MPs must submit their **election certificate** to the Lok Sabha staff before being called to take the oath or affirmation. This requirement was **introduced after 1957**.
- After verification, MPs can take the **oath or affirmation in English** or **any of the 22 languages** specified in the **Constitution**.
- The **text of the parliamentary oath** is in the Constitution's **third schedule**:

Oath Procedure for MPs in Jail

- The Constitution states that an **MP's seat can be declared vacant** if they do not attend **Parliament for 60 days**.
- **Courts have permitted MPs in jail** to take the oath in Parliament to prevent their seats from becoming vacant.

Leader of Opposition

News Excerpt:

Amid uncertainties, a Congress leader is expected to be appointed as the Leader of the Opposition in the 18th Lok Sabha before the upcoming Parliament session.

More About the News:

The 18th parliament is set to appoint a Leader of the Opposition (LoP), enabled by the UPA's majority, ending a decade-long absence in the Lower House since 2014.

Concept and Importance:

- The Leader of the Opposition in India holds a pivotal role within the parliamentary system, serving as the **representative of the opposition voice** in both Houses of Parliament.
- Engaging actively in **decision-making processes**, the Leader of the Opposition offers alternative perspectives and ensures accountability of the government.
- This role mirrors that of the Shadow Prime Minister in the UK. Their primary **goal is to uphold the government's responsibility to the public**.

Provision for Leader of Opposition:

- The Leader of Opposition is a **statutory post defined in the Salaries and Allowances of Leaders of Opposition in Parliament Act, 1977**.
- **He has been defined as the leader of the largest party in opposition in either the Lok Sabha (House of the People) or the Rajya Sabha (Council of States)**.

Benefits and Responsibilities:

- Under The Salary and Allowances of Leaders of Opposition in Parliament Act of 1977, **the Leader of the Opposition enjoys several benefits, including a salary, residence, and other allowances**.
- Responsibilities include **chairing opposition meetings, discussing and examining government policies and bills, and presenting alternative policies**.
- LoP is part of committees responsible for the appointment process for officials such as the director of the CBI, the CECs, the NHRC chairperson, the CVC, etc.
- The LoP is also a member of key committees such as Public Accounts, Public Undertakings, Estimates, and several Joint Parliamentary Committees. The role has historical **roots dating back to the Central Legislative Assembly in British India, with notable leaders like Motilal Nehru receiving statutory recognition and benefits**.
 - **However, the post was not recognized till 1969, when Ram Subhag Singh became the first recognized LoP of the Lok Sabha.**
- **The Act of 1977 formally defined the term "Leader of the Opposition," solidifying its significance in Indian polity.**

Significance:

- **The Leader of the Opposition vital for questioning and challenging the decisions of the ruling party.**
- They ensure a balance of power and can potentially form the government if the current one falls.

National Commission for Minorities Discusses Implementation of Anand Marriage Act

News Excerpt:

The **National Commission for Minorities** conducted a video conference with **18 States and Union Territories** to discuss the implementation and registration of **Sikh marriages** under the **Anand Marriage Act**.

More About News:

- During the meeting, representatives from **Jharkhand, Maharashtra, and Meghalaya** reported that they had already **implemented the Act** in their respective states.
- The **remaining States and Union Territories** assured that they would implement the Act within the **next two months**.

National Commission for Minorities

- With the enactment of the National Commission for Minorities Act, 1992, the Minorities Commission became a statutory body and was renamed as the National Commission for Minorities.
- The first Statutory National Commission was set up on 17th May 1993.
- As per the 2001 Census, these six religious minority communities constitute 18.80% of the country's population.
- **Structure:** As per Section 3(2) of the NCM Act 1992, the Commission consists of: a Chairperson, a Vice-Chairperson, Five Members i.e. total of 7 persons to be nominated by the Central Government from amongst persons of eminence, ability and integrity.
- **Tenure:** Each Member holds office for a **period of three years** from the date of assumption of office.

About Anand Marriage Act:

- The **Anand Marriage Act**, first established in **1909** by the **British Imperial Legislative Council**, was created to recognize the Sikh wedding ceremony, **Anand Karaj**.
- The purpose of this statute was to provide Sikh marriages a **distinct legal legitimacy** from Hindu marriages.
- The **Hindu Marital Act** was used to record **Sikh marriages** before this legislation, but the Sikh community pushed for separate acknowledgement of their marital customs, especially the **Anand Karaj ceremony**.

Anand Marriage Act in Jammu & Kashmir:

- The **Anand Marriage Act** went into effect in **Jammu & Kashmir in 2023**.
- The **Jammu and Kashmir administration** has developed detailed rules for the **registration of marriages** under this Act, addressing the long-standing demand of Sikhs who previously had to solemnize their marriages under the Hindu Marriage Act.

Role of Parliament:

- In **2012**, **Parliament passed the Anand Marriage (Amendment) Bill**, which legally recognized traditional Sikh marriages.
- While the central government approved the amendments, **individual states and Union territories** were responsible for establishing their own rules for registering **Anand marriages**.

Gram Nyayalayas

News Excerpt:

Recently, the Supreme Court (SC) emphasized the importance of establishing 'Gram Nyayalayas' to provide affordable and speedy justice at the grassroots level to the citizens at their doorsteps and also reduce the huge pendency of cases in trial courts.

Key Highlights of the Order:

Directive to State Authorities:

- **The SC directed the chief secretaries of all states and registrar generals of High Courts to file affidavits within six weeks.**
 - These affidavits must detail the establishment and functioning of Gram Nyayalayas, including the infrastructure provided.

Background of the Gram Nyayalayas Act, 2008:

- **The Act, passed by Parliament in 2008, mandates the establishment of Gram Nyayalayas to offer justice at the doorstep of citizens.**
- The Act aims to ensure justice is not denied due to social, economic, or other disabilities.
- It requires the appointment of a **'Nyayadhikari'** for each Gram Nyayalaya, who should be eligible to be appointed as a **judicial magistrate of the first class**.
- These rural courts are intended to reduce the massive backlog of **cases in trial courts and ensure that justice is accessible to all, regardless of social, economic, or other barriers.**

SC's Observations:

- The **establishment of Gram Nyayalayas is crucial for de-clogging trial courts and providing easy access to justice.**
- The **right to justice includes the right to affordable justice.**

- The Court also **reiterated a previous order from January 2020, which directed states to issue notifications for the establishment of Gram Nyayalayas within four weeks and urged high courts to expedite consultations with state governments.**
- Before filing affidavits, state chief secretaries and registrar generals of High Courts are to coordinate on the policy for establishing Gram Nyayalayas.

Current Status and Concerns:

- Despite the Act being in place for 16 years, only 264 Gram Nyayalayas are currently functional, far below the expected number of 6,000.
 - **Not even four per cent of Gram Nyayalayas have been established.**
- The petition, filed in 2019, sought directions for the establishment of Gram Nyayalayas under the supervision of the SC.

Right to Repair Portal

News Excerpt:

The **Department of Consumer Affairs (DoCA)** held a meeting with **automobile associations and companies** to encourage their participation in the newly launched Right to Repair Portal.

About the Right to Repair Portal:

- On National Consumer Rights Day 2022, the **Department of Consumer Affairs (DoCA)** of India launched the **Right to Repair Portal India**.
- **The portal aims to empower consumers with easier access to product repair information, contribute to the circular economy, and reduce electronic waste.**
- This portal serves as a **single platform to provide consumers with easy access to necessary information on the repair and maintenance of products.**
- It provides consumers with **access to product manuals and repair videos**, as well as information on the **price and warranty of spare parts**. The portal also allows consumers to **submit feedback and suggestions** on products and services.



The Right to Repair Portal covers 4 sectors:

- Farming Equipments
- Mobile and Electronics
- Consumer Durables
- Automobile Equipment

Significance of the new Portal:

1. The Portal is expected to play a key role in **enabling consumers to make informed decisions** about the

- purchase and maintenance of their products**, and to promote a circular economy model.
2. The initiative is part of the government's efforts to **uphold consumer rights** and **address evolving concerns about hassle-free product repairs**.

Right to Repair:

- The "Right to Repair" is a non-traditional legal concept that advocates for allowing consumers and independent repair shops to fix devices, rather than being limited to manufacturer-authorized repairs.
- It seeks to give consumers more control over their devices, reduce environmental impact, and support local repair businesses.
- India has not yet codified the "right to repair" into law.

Global Practices:

- In the US, the Federal Trade Commission has directed manufacturers to remedy unfair anti-competitive practices and asked them to ensure that consumers can make repairs, either themselves or by a third-party agency.
- Recently, the U.K. has also passed a law that includes all electronic appliance manufacturers to provide consumers with spare parts for getting the repair done either by themselves or by the local repair shops.
- The European Union passed legislation that required manufacturers to supply parts of products to professional repairmen for a time of 10 years.

Department of Consumer Affairs (DoCA):

- DoCA is one of the two Departments under the Ministry of Consumer Affairs, Food & Public Distribution.
- It was constituted as a separate Department in June 1997 to give a fillip to the nascent consumer movement in the country.

The Department has been entrusted with the following work:

- Implementation of Consumer Protection Act, 2019.
- Implementation of the Bureau of Indian Standards Act, 2016
- Implementation of Standards of Weights and Measures - The Legal Metrology Act, 2009.

Review of ICCPR Implementation in India

News Excerpt:

India's fourth periodic review of its implementation of the UN- International Covenant on Civil and Political Rights (ICCPR) was successfully concluded by the Human Rights Committee in Geneva.

UN International Covenant on Civil and Political Rights (ICCPR):

- ◁ **The ICCPR** is one of **nine UN Human Rights Treaties**.

- ◁ It was **adopted by the UN General Assembly in 1966 and came into force in 1976**.
- ◁ It elaborates further on the **civil and political rights and freedoms** listed in the Universal Declaration of Human Rights.
- ◁ **It has 53 articles, of which Articles 1 – 27 contain substantive rights and corresponding obligations of State parties.**
 - This includes **guaranteeing identified rights to every person** within the territory, or subject to the jurisdiction, of a State party.
- ◁ As of November 2021, **173 States parties have ratified the Covenant** and are bound to protect and respect the rights included within it.
- ◁ **There are still 6 UN Member States that have only signed but not yet become a party.**
 - **For example**, China signed in 1998 but has not yet ratified it.
- ◁ **India, a state party since 1979, has undergone three previous reviews, with the last in 1997.**

Review mechanism:

- ◁ The Human Rights Committee, consisting of **18 independent experts, monitors ICCPR implementation through periodic reviews and provides observations and recommendations.**
- ◁ The recent review involved a constructive dialogue between the Indian delegation and the Human Rights Committee.
- ◁ It discussed issues including **anti-corruption measures, non-discrimination, women's and minorities' rights, counter-terrorism and national security measures, judicial framework, privacy and data protection laws, and new criminal laws.**
- ◁ The Committee acknowledged **India's traditions of pluralism, non-violence, and diversity, aligning with human rights principles, and recognized India as a vibrant parliamentary democracy.**

Significance of the Review:

- ◁ The **rights and freedoms under the ICCPR** are guaranteed by the **Indian Constitution** and its legislative and judicial framework.
- ◁ The MEA emphasised India's achievements in protecting the **rights of vulnerable groups** and noted the country's contributions to the global human rights framework.
- ◁ This **review reflects India's commitment to the international human rights framework and its ongoing efforts to protect and promote the rights of its citizens.**

The individual rights under ICCPR are reflected in the Fundamental Rights of the Indian Constitution, some of which are highlighted in the table below:

ICCPR Article	ICCPR Right	Indian Constitution Article	Indian Fundamental Right
Article 6	Right to Life	Article 21	Protection of life and personal liberty
Article 7	Prohibition of Torture	Article 21	Protection of life and personal liberty (interpreted by courts)
Article 14	Right to Equality before the Law	Article 14	Equality before the law and equal protection of the laws
Article 18	Freedom of Thought, Conscience, and Religion	Article 25	Freedom of conscience and free profession, practice, and propagation of religion
Article 19	Freedom of Expression	Article 19(1)(a)	Freedom of speech and expression
Article 27	Rights of Individuals Belonging to Minorities	Article 29, Article 30	Protection of interests of minorities; Right of minorities to establish and administer educational institutions

Conclusion: The Indian delegation engaged in the review and highlighted India's dedication to addressing human rights concerns and enhancing the protection of its citizens' rights.

SOCIAL ISSUES

Sampoornata Abhiyan

News Excerpt:

NITI Aayog has launched a nationwide **Sampoornata Abhiyan**.

About Sampoornata Abhiyan:

- It is a 3-month programme launched by the **NITI Aayog**.
- 'Sampoornata Abhiyan' seeks to achieve **saturation in each of the 6 identified indicators** in the **112 Aspirational Districts** and **500 Aspirational Blocks** under the Aspirational Districts Programme and Aspirational Blocks Programme.



Focus Areas of 'Sampoornata Abhiyan' in: Aspirational Blocks Key Performance Indicators:

1. Percentage of pregnant women registered for Antenatal Care (ANC) within the first trimester;
2. Percentage of persons screened for Diabetes against the targeted population in the Block;
3. Percentage of persons screened for Hypertension against the targeted population in the Block;
4. Percentage of pregnant women taking Supplementary Nutrition under the ICDS Programme regularly;
5. Percentage of Soil Health Cards generated against the soil sample collection target; and
6. Percentage of SHGs that have received a Revolving Fund against the total SHGs in the Block

Aspirational Districts Key Performance Indicators:

1. Percentage of pregnant women registered for Antenatal Care (ANC) within the first trimester;
2. Percentage of pregnant women taking Supplementary Nutrition under the ICDS Programme regularly;
3. Percentage of children fully immunized (9-11 months) (BCG+DPT3+OPV3+Measles 1);
4. Number of Soil Health Cards distributed;
5. Percentage of schools with functional electricity at the secondary level; and
6. Percentage of schools providing textbooks to children within 1 month of the start of the academic session

Aspirational Programme	Districts	Aspirational Programme	Blocks
Launched in January 2018	Launched in January 2023	Launched in January 2018	Launched in January 2023
Aims to quickly and effectively transform 112 districts across the country	Aims for saturation of essential government services in 500 Blocks (329 Districts) across the country	Focuses on five themes:	Focuses on five themes:
<ul style="list-style-type: none"> • Health & Nutrition • Education • Agriculture & Water Resources • Financial Inclusion & Skill Development • Infrastructure 	<ul style="list-style-type: none"> • Health & Nutrition • Education • Agriculture and Allied Services • Basic Infrastructure • Social Development 	Progress is measured on 81 indicators of development	Progress is measured on 40 indicators of development

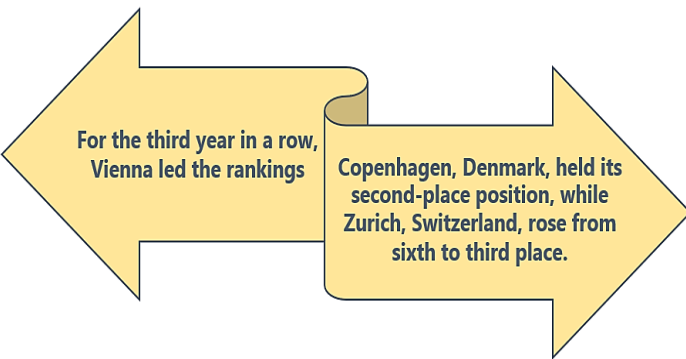
Global Liveability Index, 2024

News Excerpt:

The **Economist Intelligence Unit (EIU)** has its **Global Liveability Index**, evaluating **173 cities** globally. This index reveals how comfortable these cities are to live in.

Global Liveability Index:

- **The Global Liveability Index** is based on **30 indicators** across the following categories: **stability, healthcare, culture, environment, education, and infrastructure.**
- Overall, the report indicates a **slight improvement** in the livability scores across the 173 cities surveyed, with the average score increasing to **76.1 out of 100.**
- This suggests a **marginal enhancement** in the **quality of life** for **urban residents** worldwide.



Top Cities in The Index:

Key Findings of The Index:

- **Western Europe** remains the **most livable region**, excelling in four key categories.
- **North America** follows closely, ranking **second overall** and **leading in education.**
- The **Asia-Pacific region**, in **third place**, has seen only slight improvements in its livability scores.
- **Eastern Europe** has experienced the most **significant improvement**, largely due to advancements in **healthcare and education.**
- **Latin America**, the **Middle East**, **North Africa (MENA)**, and **Sub-Saharan Africa** have also recorded higher scores in **healthcare and education.**

Indian City in The Index:

- The report notably features **five Indian cities.**
- **Delhi and Mumbai** are **tied** at the **141st rank** with a score of **60.2 out of 100**, followed by **Chennai (59.9)**, **Ahmedabad (58.9)**, and **Bengaluru (58.7)** in the index.

Challenges:

- Despite these modest improvements, many cities around the world still face significant challenges, including **geopolitical conflicts, civil unrest, and housing crises**, which hinder their ability to achieve higher livability standards.
- **Indian cities** saw **declining livability scores**, primarily due to **poor air quality.** The EIU noted that while **infrastructure development** is a government priority, improvements will take time due to the country's vast size and geography.

The Least Livable Cities:

- The least livable cities are mainly in **Sub-Saharan Africa**, the **Middle East**, and **North Africa.**

- **Damascus, Syria, and Tripoli, Libya**, ranked lowest due to **civil unrest** impacting their economies.
- **Kyiv, Ukraine**, was the ninth least livable city as it deals with ongoing armed **conflict following Russia's invasion** in February 2022.
- **Tel Aviv** experienced the most significant drop, **falling 20 places to 112th** globally, due to its war with Hamas.

NCW Reports Significant Increase in Complaints Across India

News Excerpt:

In 2024, the National Commission for Women (NCW) has received 12,600 complaints so far, with Uttar Pradesh and Delhi registering the highest numbers.

- The majority of these complaints fall under the category of right to dignity, primarily concerning harassment issues, excluding domestic violence.

Key highlights of the report:

- NCW registered **28,811 complaints of crimes against women** in the past year, with Uttar Pradesh accounting for about 55% of these cases.
- **The highest number of complaints fell under the right to dignity category**, which includes harassment other than domestic violence, totalling 8,540. It was followed by 6,274 complaints of **domestic violence.**
- Other significant categories of complaints included **dowry harassment, molestation, police apathy against women, and rape and attempted rape.**

Regional distribution of cases:

- Uttar Pradesh recorded the highest number of complaints, followed by Delhi and Maharashtra.

The overall number of complaints in 2023 represented a **decrease from 2022 when the NCW received 30,864 complaints, the highest since 2014.**

National Commission for Women:

- NCW is a statutory body established under the **National Commission for Women Act of 1990.**
- NCW plays a pivotal role in safeguarding and advancing women's rights in India.

Maternity Leave for Surrogacy Cases

News Excerpt:

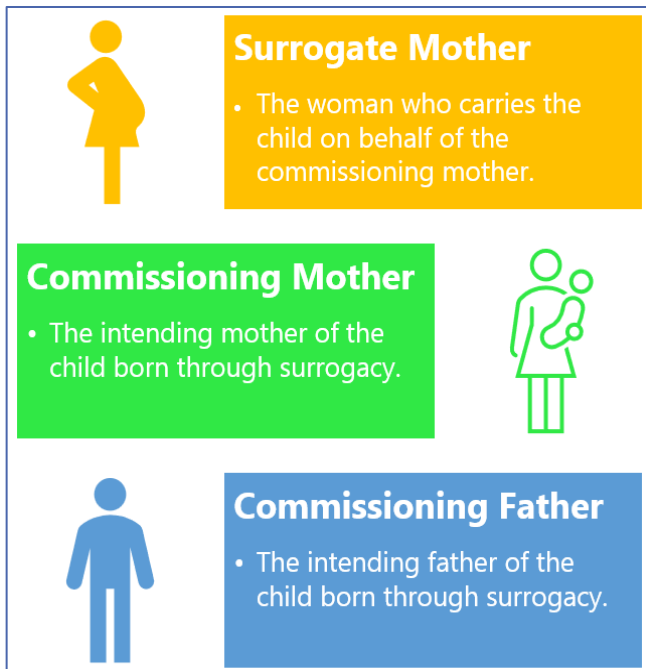
The Central Government has introduced significant amendments to **the Central Civil Services (Leave) Rules, 1972**, to extend maternity leave benefits to **women government employees** who have **children through surrogacy.**

Key Provisions of the Amended Rules:

Maternity Leave for Surrogacy Cases:

- The new rules stipulate that women government employees **can now take 180 days of maternity leave** if they have children through surrogacy.

- This provision applies to both the **surrogate mother and the commissioning mother**, provided they have fewer than two surviving children.
- The amended rules also provide for **15 days of paternity leave for the commissioning father**,



Child Care Leave for Commissioning Mothers:

- Commissioning **mothers with fewer than two surviving children** are now entitled to childcare leave.
- Existing rules allow both female government servants and single male government servants to take childcare leave for up to **730 days during their entire service**.
- This leave can be used to care for the two eldest surviving children for their various needs, including education and sickness.

Significance of the Amendments

- Until now, there were **no provisions for maternity leave** for women government employees in cases of children born through surrogacy.
- These amendments **address this gap**, ensuring that government employees who opt for surrogacy have access to the same maternity leave benefits as those who give birth naturally.

Conclusion:

- This **progressive move** ensures that both surrogate and commissioning mothers can avail of maternity leave and associated benefits.
- The **amendment to the Central Civil Services (Leave) Rules, 1972**, reflects the government's commitment to supporting all forms of parenthood.
- By extending maternity and paternity leave benefits to commissioning parents and surrogate mothers, the government **acknowledges the evolving dynamics of family and parenthood**, promoting inclusivity and well-being among its employees.

UN- 'Global Principles' to combat online misinformation and hate speech

News Excerpt:

The **United Nations Secretary-General** has unveiled a set of principles aimed at curbing the spread of online **misinformation, disinformation, and hate speech**.

- A set of principles Titled, the '**United Nations Global Principles for Information Integrity**', are designed to address the widespread harm caused by false information on digital platforms.

UN Global Principles for Information Integrity

At the heart of the initiative are **five core principles**:

- Societal trust and resilience
- Independent, free, and pluralistic media
- Healthy incentives
- Transparency and research
- Public empowerment

These principles form the foundation of a vision for a more humane information ecosystem, adding that the initiative is aimed at prioritizing **human rights and supporting sustainable development, climate action, democracy, and peace**.

The Impact of Digital Misinformation on Global Society:

- The threats to **information integrity** are not new but are now spreading at unprecedented speeds due to digital platforms and **artificial intelligence technologies**.
- The rise of misinformation and hate speech online has **fuelled prejudice, exacerbated conflicts, demonized minorities**, and undermined the **integrity of elections**.
- **False narratives** and **distortions** breed cynicism, disbelief, and disengagement, undermining social cohesion and impeding progress on Sustainable Development Goals.
- The impact of **opaque algorithms** that create information bubbles and reinforce prejudices, including racism, misogyny, and various forms of discrimination.
- Noting that vulnerable groups such as women, refugees, migrants, and minorities are often targeted, activists, researchers, and leaders face **harassment and humiliation**.
- Misinformation spreads about critical issues like **vaccines and medical treatments**, further adding to the problems of **humanitarian relief**. Citing examples of the challenges faced by the UN, the international body noted that **misinformation and conspiracy theories** have affected its operations as well.

U-Win Vaccine Portal

News Excerpt:

Ground report from a pilot project in MP village shows how ASHA workers are pivoting a digital revolution by using **U-Win**, the government's new children's vaccination management portal.



About U Win Portal:

- The U-WIN portal is a replication of the Covid-19 vaccine management system Co-WIN.
- Government's is conducting a **pilot project in 64 districts** to register pregnant women and children on U-Win for last mile coverage of maternal and child care.
- The platform will be driven by **community health workers** who have already had success in polio and COVID vaccinations.
- U-WIN platform captures each & every vaccination event of all pregnant women & children under **Universal Immunization Programme (UIP)**.
- The U-WIN will ensure **timely administration of vaccine** doses by digitally recording every vaccination event under the Universal Immunization Programme among all pregnant women and children aged 0-5 years.
- The portal will **target 2.9 crore pregnant women** and 2.6 crore infants (0-1 years) annually by providing 11 vaccines against 12 vaccine preventable diseases.
- The platform generates a **uniform QR-based, digitally verifiable e-vaccination certificate**, similar to the COVID vaccination certificate, which can be accessed anytime by the citizens through a single click.
- The U-Win portal is one of the important steps towards halving the number of **zero-dose children by 2030**.

Universal Immunization Programme (UIP):

- India's Universal Immunization Programme (UIP) is a part of the Reproductive and Child Health (RCH) Program under the National Health Mission (NHM).
- It is one of the largest public health programs in the world under which vaccination is being provided free of cost to all pregnant women & children.

Zero-dose Children

Those who lack access to or are never reached by routine immunization services.

Operationally measured as those who did not receive their first dose of DTP, a vaccine containing diphtheria-tetanus-pertussis.

- Vaccination can be availed against 12 vaccine-preventable diseases: nationally against 11 diseases- Diphtheria, Pertussis, Tetanus, Polio, Measles, Rubella, severe form of childhood Tuberculosis, Rotavirus Diarrhea, Hepatitis B, Meningitis & Pneumonia caused by Hemophilus Influenza Type B and Pneumococcal Pneumonia and sub-nationally against 1 Disease - Japanese Encephalitis (JE vaccine is provided only in endemic districts).

UNITED NATIONS ALARMED AS GLOBAL CHILDHOOD IMMUNIZATION LEVELS STALL

- The dangerous coverage gaps in children's vaccination can cause outbreaks of diseases like measles.

Global Vaccination Data:

- In 2023, 84 percent of children, or 108 million, received three doses of the vaccine against diphtheria, tetanus and pertussis (DTP), with the third dose serving as a key marker for global immunization coverage.
- The latest trends demonstrate that many countries continue to miss far too many children.
- 2.7 million additional children remained unvaccinated or under-vaccinated vaccinated in 2023 compared to the pre-pandemic levels in 2019.
- The number of zero-dose children, who have not received a single jab, rose to 14.5 million in 2023 from 13.9 million in 2022 and from 12.8 million in 2019.
- A full 6.5 million children worldwide did not complete their third dose of the DTP vaccine, which is necessary to achieve disease protection in infancy and early childhood.

SDG India Index 2023-24

News Excerpt:

India has made significant strides in achieving the **Sustainable Development Goals (SDGs)**, as highlighted by the **SDG India Index 2023-24**.

More about the SDG India Index:

- SDG India Index is the **country's principal tool for measuring national and subnational progress** on the Sustainable Development Goals (SDG).

The **SDG India Index 2023-24** was released by the **NITI Aayog**.

- It is the **fourth edition** of the index. The **last SDG India Index** was released in **2020-21**.
- The Index measures **national and subnational progress** on **113 indicators** aligned with the **Ministry of Statistics and Programme Implementation's National Indicator Framework (NIF)**.
- The index computes scores for **16 SDGs** for each state and UT, with **composite scores** ranging from **0 to 100**, reflecting the distance covered towards achieving the targets.

Key highlights of the SDG India Index 2023-24:

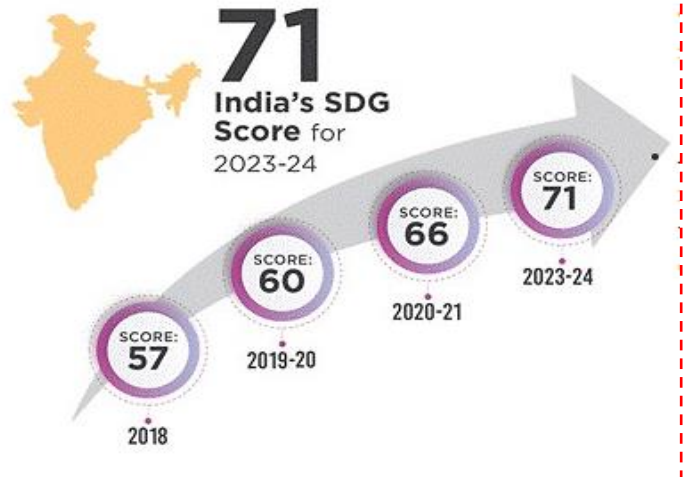
- **Uttarakhand** has met the criteria of Sustainable Development Goals and secured the **first position** in the entire country, **jointly with Kerala**.
- **Tamil Nadu took the third spot**, followed by **Goa and Himachal Pradesh**.
- Compared to 2020-21 scores, which was the last time NITI Aayog published the index, **Punjab, Manipur, West Bengal, and Assam** recorded the **highest increase of 8 points** to 76, 72, 70, and 65 points, respectively.
- Targeted intervention by the government has helped India achieve significant improvements across 16 goals set under the SDGs.
- All States have shown an improvement in the overall scores.
- Overall SDG score for the country is 71 for 2023-24, significant improvement from 66 in 2020-21 and 57 in 2018 (Baseline report).

Goal specific observations:

- Among goals, **"No Poverty", "Decent Work and Economic Growth", and "Life on Land"** recorded the **highest increase in points** across states from 2020-21 scores.
- Goals like **"Gender Equality"** and **"Peace, Justice, and Strong Institution"** saw the **smallest increase** in points.
- Notably, **"Reduced Inequalities"** was the **only goal to record a reduction in points to 65 in 2022-23 from 67 in 2020-21**. "Reduced Inequalities is the

only SDG in which there is a marginal drop, and this is also an area that shows you the distribution of wealth.

- Significant progress in goals on eliminating poverty, providing decent work, economic growth, climate action and life on land was observed.



Nearly 50% of Indians fail to meet WHO's recommended standard for physical activity.

News Excerpt:

A recent study published in **The Lancet Global Health** reveals that approximately **49.4% of Indian adults** do not meet the **World Health Organization's (WHO)** recommended levels of physical activity.

Findings:

- This finding highlights a significant health concern for India, as insufficient physical activity can lead to various health issues.
- **Physical inactivity is known to heighten the risk** of developing non-communicable diseases, including diabetes and heart disease.

Globally, nearly a third of adults (1.8 billion people) are failing to meet recommended activity.

India ranks 12th globally for physical inactivity.

Key finding of the study

The prevalence of inactivity has more than doubled since 2000.

In India, women (57%) were more physically inactive than men (42%) as of 2022.

- **Rising levels of physical activity**, along with an increasingly sedentary lifestyle, are contributing to an increase in cases of these diseases and burdening healthcare systems around the world, according to the WHO.

ECONOMY

Project Nexus

News Excerpt:

RBI has announced its participation in **Project Nexus**, a **multilateral initiative** aimed at enabling **instant cross-border retail payments** by interlinking **domestic fast payment systems (FPSs)**.

About Project Nexus:

- The **RBI and ASEAN countries** have agreed to create a platform to facilitate these rapid transactions, which is expected to be **operational by 2026**.
- It is designed to standardize the way **fast payment systems (FPSs)** are used.
- Conceptualized by the Innovation Hub of the **Bank for International Settlements (BIS)**, it seeks to connect the **fast payment systems (FPSs)** of **four ASEAN countries—Malaysia, the Philippines, Singapore, Thailand—and India**.
- These nations will serve as the **founding members** and first movers of the platform.
- An agreement was signed by **BIS** and the central banks of the 5 founding countries in **Basel, Switzerland**.
- **Indonesia**, which has been involved from the early stages, continues to participate as a **special observer**.
- Once operational, Nexus will significantly enhance the **efficiency, speed, and cost-effectiveness** of **retail cross-border payments**.

India's fast payment systems (FPSs):

- The RBI has been working bilaterally with various countries to link **India's Unified Payments Interface (UPI)**, with their respective FPSs for **cross-border Person to Person (P2P)** and **Person to Merchant (P2M)** payments.
- While **bilateral connections** between India and partner countries offer benefits, a **multilateral approach** will further expand the international reach of Indian payment systems.
- The Indian government is emphasizing that the benefits of UPI should extend beyond India. So far, countries like **Sri Lanka, Nepal, Mauritius, France, UAE, Singapore, Peru** have partnered or shown interest in partnering with India on emerging fintech and payment solutions.
- **In 2023**, UPI accounted for nearly **80% of digital payments in India**, and as of 2022, **India made up almost 46% of the world's digital transactions**.

National Payments Corporation of India (NPCI)

- It is an initiative of **RBI and the Indian Banks' Association (IBA)** under the provisions of the **Payment and Settlement Systems Act, 2007**
- The objective of NPCI was to provide **infrastructure to the entire Banking system** in India for **physical as well as electronic payment and settlement systems**.
- It has been incorporated as a **"Not for Profit" Company** under the **provisions of Section 25 of the Companies Act 1956** (now Section 8 of the Companies Act 2013).

Financial Services Institutions Bureau (FSIB)

News Excerpt:

The **Financial Services Institutions Bureau (FSIB)** has recommended **Challa Sreenivasulu Setty** as the next **Chairman** of the **State Bank of India**.

More about the news:

- The final decision on the appointment will be made by the **Appointments Committee of the Cabinet (ACC)**, chaired by the **Prime Minister**.

About Financial Services Institutions Bureau (FSIB):

- **FSIB** was established by the Central Government, effective **July 1, 2022**.
- It's a government body set up under the **Department of Financial Services**.
- It replaced **the Banks Board Bureau (BBB)** after it was declared an **incompetent authority** by the **Delhi High Court** in 2021.
- Its purpose is to recommend candidates for appointment as **whole-time directors** and **non-executive chairpersons** on the **Public Sector Banks, Public Sector Financial Institutions, and Public Sector Insurance Companies**.
- Provide recommendations to the Government regarding **appointments, transfers, term extensions, and termination of directors' services**.
- Advise the Government on **optimal management structures** at the **Board level** for **Public Sector Banks (PSBs), Financial Institutions (FIs), and Public Sector Insurance companies (PSIs)**.
- Establish and **maintain a databank** with performance data related to **PSBs, FIs, and PSIs**.
- Offer guidance to the Government on designing **appropriate training and development programs** for **management personnel in PSBs, FIs, and PSIs**.

Assist PSBs, FIs, and PSIs in **developing business strategies** and **capital-raising plans**.

Container Port Performance Index (CPPI)

News Excerpt:

Nine Indian ports have been ranked among the Global Top 100 in the latest edition of the **Container Port Performance Index (CPPI) 2023**.

More About the News:

- The report highlights the significant strides made by **Indian ports in operational efficiency and service delivery**.
- The Union Minister attributed this success to the ambitious **Sagar Mala programme**.
 - The programme focuses on the **modernization and mechanization of ports** alongside the integration of advanced technologies to boost performance and efficiency.
 - **Incorporation of new technologies and green infrastructure**, is important for ensuring the stability of global markets and the sustainability of India's maritime industry.
- **Visakhapatnam Port** stood out with an impressive **27.5 moves per crane hour**, a turnaround time (TRT) of 21.4 hours, and minimal berth idle time, showcasing **exceptional efficiency in handling container ships**.

The CPPI ranks **405 global container ports by efficiency**, focusing on the duration of port stay for container vessels.

Container Port Performance Index (CPPI)

- Developed by the **World Bank and S&P Global Market Intelligence**, the Index is a **comparable index** of global container port performance intended to serve as a reference point for key stakeholders in the global economy, including national governments, port authorities, development agencies, etc.
- **Aim:** To **identify areas for enhancement for the benefit of multiple stakeholders in the global trading system and supply chains**, from ports to shipping lines, national governments, and consumers.

Key Observations:

- There are **57 new ports in the CPPI 2023**, including Muuga Harbour in Estonia and Port of Al Duqm in Oman, as well as several notable movers. One of the major Indian ports, **Visakhapatnam Port**, made it into the top 20.
- The top-performing port, **China's Yangshan Port**, **earned the top spot for the second consecutive year**, while **Oman's Port of Salalah** retained the number two position.

53rd GST Council meeting

News Excerpt:

The **53rd GST Council meeting** took place in **Delhi**, chaired by the **Union Minister for Finance**.

More about the news:

- < The Council recommended taxes on items such as **milk cans** and **solar cookers** and provided some relief for students in specific types of **rented accommodations**.
- < Additionally, the **GST on cartons** was **reduced from 18% to 12%**, offering relief to **apple farmers** in **Himachal Pradesh** and **Jammu and Kashmir**.

The Origins of the GST regime

- The GST regime was introduced after the **Constitutional (122nd Amendment) Bill** was passed by both Houses of **Parliament in 2016**.
- Following ratification by **more than 15 State Assemblies**, it was enacted as the **101st Constitution Amendment Act, 2016**.
- The **GST was implemented in 2017** to simplify **India's complex tax structure**, where both the Centre and states previously levied multiple taxes.

Structure of the GST Council

- The President established the **GST Council** as a **joint forum** of the **Centre and the states** under **Article 279A (1)** of the amended Constitution.
- According to **Article 279**, the Council is responsible for making recommendations to the Union and states on **essential GST issues**, such as the **inclusion or exclusion of commodities** in the GST regime, **model GST laws**, and various **GST rate slabs**.
- The Council includes the **Union Finance Minister as the chairperson**, the **Union Minister of State (Finance)**, and a minister nominated by each state who is in charge of finance, taxation, or any other relevant portfolio.

Judicial Review of GST Council

- In **2022**, the **Supreme Court** ruled that the **recommendations of the GST Council are not binding**.
- The judgment (**Union of India versus M/s Mohit Minerals**) clarified that **Article 246A** of the Constitution grants both **Parliament and state legislatures simultaneous power to legislate on GST**.
- Therefore, the Council's recommendations are the result of a **collaborative dialogue between the Union and the states**.
- The Court also highlighted that the **GST Council** has an **unequal voting structure**. **States** collectively hold a **two-thirds voting share**, while the **Union holds one-third**.

Bank Deposits

News Excerpt:

As of **September 2023**, only **44% of bank deposits** were covered by insurance.

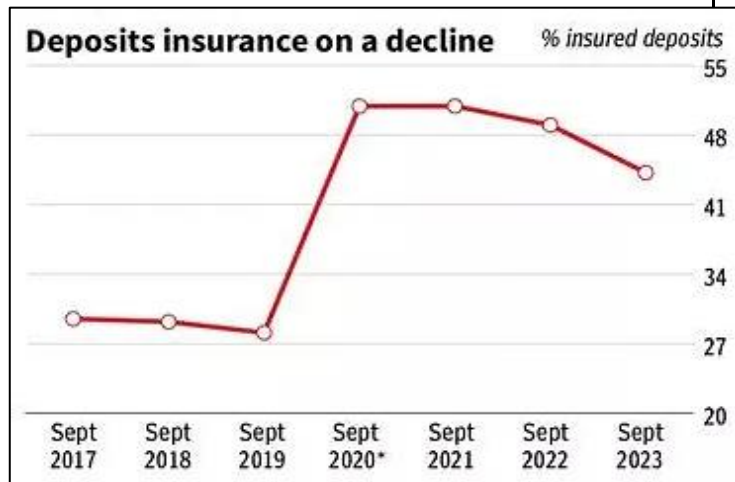
More details about the news:

- < **Since 2021**, the **ratio of secured deposits** has been steadily **falling**.

- ◁ In **September 2022**, **49% of deposits were insured**, down from **50.9%** in both **September 2021 and 2020**, according to RBI data.
- ◁ With rising interest rates, the **value of deposits has increased**.
- ◁ From **September 2022 to September 2023**, the value of insured deposits **grew by 3.4% year-on-year**.

Importance of Deposit Insurance

- ◁ Deposit insurance **protects customers from losing all their money** in the event of a **bank failure**.
- ◁ In India, the **Deposit Insurance and Credit Guarantee Corporation (DICGC)** provides this insurance.
- The insurance cover **per depositor per bank** was increased from **1 lakh to 5 lakh** in **February 2020**.



The reason behind low insured deposit

- However, a **large portion of deposits remains uncovered** because depositors often hold amounts **exceeding the maximum insurance coverage of Rs 5 lakh** in the same capacity.
- **For example**, if anyone has **four deposits totalling Rs 15 lakh** in a single bank account under the same capacity, **only Rs 5 lakh would be insured**, leaving Rs 10 lakh without coverage under the deposit insurance scheme.

The decline in Registered Banks

- The number of **banks registered with DICGC** for deposit insurance has been **decreasing** over the past three years.
- There were **2,058 registered banks in FY21**, which fell to **2,040 in FY22**, **2,026 in FY23**, and further to **1,997 in FY24**.
- This decline is observed across **all categories of banks**.
- As of September 2023, **rural and cooperative banks** had the **highest coverage** at **82%** and **65%**, respectively.

Revision of Insurance Cover

- Analysts suggest that the **current insurance cover of 5 lakh needs to be revised** to keep up with **growing deposits and rising inflation**.

- In terms of **deposits insured** relative to **per capita GDP**, India is comparable to **European countries** but **lags behind the US, China, and Brazil**.
- The **RBI Deputy Governor** stated that the **size of the Deposit Insurance Fund**, at a ratio of **2.02% to insured deposits**, is in line with the global median.
- The **target** is to achieve a ratio of **2.5% by March 2028**.

China surpassed the US as India's Top Trade Partner

News Excerpt:

In the **fiscal year 2024**, **China surpassed the United States** to become **India's largest trading partner** after a two-year gap.

India's Trade with China and the US:

- In FY24, **bilateral trade between India and China increased** by 4% to **\$118.4 billion**, up from \$113.8 billion in FY23.
- In contrast, **India-US trade** during the same period **fell** by 8.6% to **\$118.3 billion**.
- While India maintains a substantial **\$36.7 billion trade surplus** with the US, it faces a severe **trade deficit with China**, highlighting the ineffectiveness of campaigns to **boycott Chinese goods** and companies.

India's Trade Deficit with China:

- Last fiscal year, **India's trade deficit** with China reached a **record \$85 billion**, doubling over the past four years.
- **Imports from China** grew by **3.3%** to exceed **\$100 billion**, even as **India's overall imports** fell by **5.6%** to **\$675 billion**.
- Currently, **China** accounts for **10.6% of India's global trade** and **15% of its import bill**.
- The significant trade deficit has caused tension between the two countries, with **India accusing China of dumping goods** in various sectors.

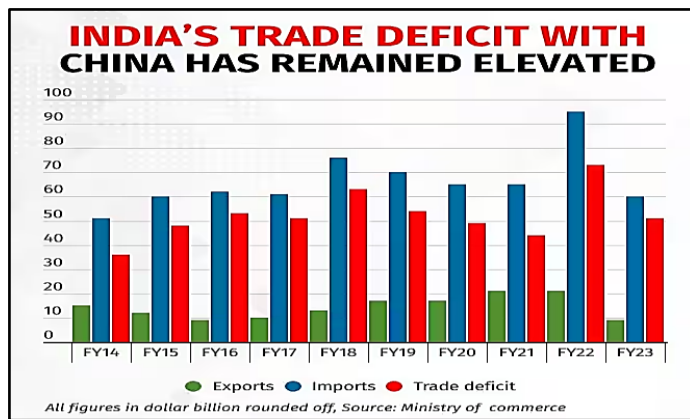
The initiative taken by India:

- India has implemented various measures, such as **increasing import duties** and **placing items on restricted lists**.
- Following the **Galwan clash in 2020**, **India amended FDI rules to restrict Chinese investments**.
- India launched **production-linked incentives (PLI Scheme)** to boost domestic production of goods that were heavily imported from China.

Challenges and Requirements:

- China's **pricing and size** in a **variety of industries** are unmatched by any other nation.
- In sectors such as renewable energy, electronics, and electric vehicles, **India lacks the technology and scale** to compete with China.
- **Restricting imports** in these areas would lead to **higher prices for consumers** and **globally uncompetitive products**.

- While **well-designed PLI schemes** could yield results, they will only be effective in the medium term.



Micro, Small, and Medium-sized Enterprises Day

News Excerpt:

The **United Nations General Assembly** has designated **June 27th** as "**Micro, Small, and Medium-sized Enterprises Day**" to highlight the significant contributions of MSMEs to achieving the **United Nations Sustainable Development Goals (SDGs)**.

More About the News

- This day was declared by the UN to highlight the vital role of **Micro-Small and Medium-sized Enterprises (MSMEs)** in the global economy.
- The UN reports that MSMEs account for **90% of businesses worldwide, 70% of employment, and 50% of GDP.**

Role of MSMEs:

- MSMEs are essential to many nations, particularly **developing countries**, where they significantly contribute to **employment, poverty reduction, and economic growth.**
- These enterprises operate in **diverse sectors** such as **manufacturing, services, agriculture, and trade, driving innovation, entrepreneurship, and local development.**

MSME in India

- According to the **MSME Ministry's FY23 annual report**, India has over **63 million MSMEs**, second only to **China's 140 million** micro and small enterprises.
- Indian MSMEs contribute **30% to the GDP, 45% to manufacturing production**, and is the **second-largest employer after agriculture.**
- The government's **Udyam registration portal** shows over **46 million MSMEs registered**, providing over **200 million jobs.**

National Small Industry Day

- In addition to MSME Day, India celebrates **National Small Industry Day** on **August 30** each year.

- The MSME sector in India plays a crucial role in promoting **inclusive growth** and **balanced regional development.**
- MSMEs also **complement large industries as ancillary units** and are vital to the entire secondary and tertiary sector ecosystem.

Classification of MSME in India:

CLASSIFICATION	Investment in Plant and Machinery or Equipment:
MICRO	Not more than Rs.1 crore and Annual Turnover; not more than Rs. 5 crores
SMALL	Investment in Plant and Machinery or Equipment: Not more than Rs.10 crore and Annual Turnover; not more than Rs. 50 crores
MEDIUM	Investment in Plant and Machinery or Equipment: Not more than Rs.50 crore and Annual Turnover; not more than Rs. 250 crores

AGRICULTURE

Changing Demand for Cereals in India

News Excerpt:

The demand for cereals used directly in households is declining in India.

Changing Pattern:

- The **National Sample Survey Office's latest Household Consumption Expenditure Survey (HCES) report** shows a steady **decline** in the **monthly per capita consumption of cereals.**
- The **overall per capita consumption** has dropped from 11.78 kg to **8.97 kg** during this period.
- Official data indicates that **cereal production is exceeding total consumption.**

Disparity in data

- As per the data **total annual cereal consumption** by **Indian households**, in **direct or home-processed forms**, has only **slightly increased** from 148.4 million tonnes in 1999-2000 to **153.1 mt in 2022-23.**
- In contrast, **cereal production** has significantly **increased** from 196.4 mt in 1999-2000 to **303.6 mt in 2022-23.**
- The **gap** between officially estimated **cereal production** and **HCES-based household consumption** has widened from 48 mt in 1999-2000 to nearly **151 mt in 2022-23.**

New Demand for cereals

- In India, while the demand for cereals for direct household consumption is declining, there is an **increasing demand** for their use in **processed foods** like **bread, biscuits, and noodles**.
- Furthermore, a large share of cereal grains is used for **animal feed** or **industrial starch production**.
- Cereals are also **converted into alcohol and ethanol**. Many **sugar mills** now have **multi-feed distilleries** that operate on **cane molasses** or **grain**, driven by the government's **ethanol blending program**.

Export of cereals

- In **2021-22**, India exported a record **32.3 million tonnes** of cereal. Meanwhile, the export of cereals was **30.7 mt in 2022-2023**.
- However, exports only account for a **fifth of the 150 mt-plus difference** between production and direct household consumption in **2022-23**.

The Unexplained Surplus

- Adding together **exports (32 mt)**, **processed food consumption (38 mt)**, and **usage for feed, starch, and fermentation (50-55 mt)**, the **total annual cereal demand** is estimated at **275-280 mt**. This is significantly **below the estimated 300 mt-plus domestic cereal output**.
- The surplus is likely absorbed by government agencies and stored in the **Food Corporation of India's warehouses** for public distribution system (PDS). PDS requires **59-60 mt of cereal per year** for distribution.

Crop Insurance Coverage Declines in FY24

News Excerpt:

During FY24, general insurance companies reduced their participation in **crop insurance** under the **Pradhan Mantri Fasal Bima Yojana (PMFBY)** despite government efforts to expand coverage in the agricultural sector.

More about the news:

- The **gross direct premium** underwritten by insurers **dropped by 4.17%** to **Rs 30,677 crore**, down from Rs 32,011 crore the previous year, even as farmers faced losses due to **floods, unseasonal rains, and heatwaves**.
- In the **previous fiscal year (FY23)**, crop insurance premiums had **risen** by 8.66 percent to Rs 29,465 crore.

Reason of Decline

- The recent decline is mainly due to a **32% reduction in premium income** underwritten by the **state-owned Agriculture Insurance Company (AIC)**, which fell to **Rs 9,890 crore** in FY24 from Rs 14,619 crore the previous year.
- **Agriculture Insurance Company (AIC)**, the leading crop insurer in the country, along with **New India**

Assurance, Oriental Insurance, and SBI General, all reduced their crop insurance exposure in FY24.

- **Eight general insurers** opted out of crop insurance during the year.
- **FY24** was challenging for farmers, who faced **crop losses** due to various factors that contributed to **rising inflation**.

Government Efforts:

Pradhan Mantri Fasal Bima Yojana

- It integrated **multiple stakeholders** on a **single platform** and covered nearly **4 crore farmers** with more than **50 different crops** in FY24.
- Over **55% of the insured farmers** were **non-loanee farmers**, mainly enrolled through **common service centres (CSCs)**, which registered **4 crore farmer applications** with 2.5 crore and 1.5 crore enrolments in the Kharif and Rabi seasons, respectively.
- **PMFBY** provides **comprehensive insurance coverage** against **crop failure**, helping **stabilize farmers' income** and encouraging the adoption of innovative practices.
- The scheme is **mandatory for loanee farmers** with crop loans or **Kisan credit card (KCC) accounts** for **notified crops** and voluntary for other farmers with insurable interest in the crop.
- The **maximum premium payable by farmers is 2 percent** for all Kharif food and oilseed crops, **1.5 percent** for Rabi food and oilseed crops, and **5 percent** for annual commercial or horticultural crops.
- To expand PMFBY coverage, the **Ministry of Agriculture and Farmer Welfare** launched **AIDE (App for Intermediary Enrolment)**, allowing intermediaries to **enroll non-loanee farmers** from Kharif 2023 onwards.
- This initiative engaged **insurance brokers**, resulting in **71% of farmer enrollments** through **Point of Salespersons**, totalling 6.88 lakh farmer applications covering over 4.15 lakh hectares across 11 states and 12 insurers.

Govt. considers ban on 2 Antibiotics.

News Excerpt:

Apex advisory body **Drugs Consultative Committee (DCC)** has recommended a **complete ban** on the import, production, distribution and sale of two antibiotics — chloramphenicol and nitrofurans — for use in **food animal production systems**.

Background of the Recommendation

- The DCC's decision stems from concerns raised by the **Marine Products Export Development Authority (MPEDA)**.

- It is the **nodal agency for the development of the seafood industry in India**, especially focusing on **exports of marine products**.

Existing Regulations and Concerns

- **Coastal Aquaculture Authority (CAA)** guidelines have already **banned 20 antibiotics** and pharmacologically active substances in shrimp aquaculture, including **chloramphenicol and other types of nitrofurans**.
- Despite existing restrictions, the detection of these antibiotics in exported shrimp has led to **shipment rejections**.
- This **affects exports** to markets with strict regulations like the European Union, United States, and Japan.
- In 2019, the Ministry of Health and Family Welfare banned **colistin**, an antibiotic, in food-producing animals, poultry, aquaculture, and animal feed supplements.

Alignment with Previous Regulations

- The DCC's recommendation aligns with a 2018 **Food Safety and Standards Authority of India (FSSAI)** notification.
- FSSAI prohibited the use of several antibiotics, including nitrofurans and chloramphenicol, in processing meat, poultry, eggs, seafood, and fishery products.
- The notification established **stringent maximum residue limits** of 0.001 milligrams per kilogram for these antibiotics, except for chloramphenicol, which has an even stricter limit of 0.0003 mg/kg.

Significance of the Proposed Ban

- The DCC's recommendation now awaits final approval from the **Drugs Technical Advisory Board (DTAB)**.
- DTAB is the **highest decision-making body** on drug regulations in India.
- It would be a **significant step** towards controlling antibiotic misuse beyond the Highest Priority of Critically Important Antimicrobials (HPCIA) and Critically Important Antimicrobials (CIAs).
- The ban aims to **preserve the efficacy of these drugs** for human medicine.

Chloramphenicol:

- It is a **broad-spectrum antibiotic** used in the treatment of a number of bacterial infections.
- It is used for **eye infections**, enteric fever, **typhoid** fever and central nervous system infections.
- It is **classified as a Highly Important Antimicrobial (HIA) by WHO**.

Nitrofurans:

- It is an antibiotic used to treat **urinary tract infections**.
- It is classified as **an Important Antimicrobials (IA) by WHO**.
- Due to their carcinogenic effect, the use of nitrofurans in food-producing animals was banned in the EU 30 years ago.

Misuse and Implications of the use of the two drugs:

- These antibiotics are often misused in poultry and other animal feed supplements.
- This misuse contributes to the development of antibiotic-resistant bacteria.

It also exacerbates the global health issue of antimicrobial resistance (AMR).

India hosts 64th ISO Council Meeting

News Excerpt:

India hosted the **International Sugar Organization (ISO) Council Meeting** in Delhi bringing together delegates from over 30 countries to discuss critical issues in the sugar and biofuel sectors.

More About the News:

- As the **world's largest consumer and second-largest producer of sugar**, India has been nominated to chair the ISO for 2024,
- The event kicked off with an **industrial tour to a grain-based distillery** in Muzaffarnagar, Uttar Pradesh, demonstrating India's adoption of **cutting-edge technology in biofuel production**.
- The main proceedings began with a workshop titled **"Sugar and Biofuels -- Emerging Vistas" at Bharat Mandapam**.

Global Collaboration:

- The event **aims to bolster the Global Biofuel Alliance**, an initiative spearheaded by India's Prime Minister to promote **sustainable biofuels worldwide**.
- This event not only showcases India's leadership in the sugar and biofuel sectors but also provides a platform for **global collaboration on sustainable energy solutions**.
- With many **ISO member countries** also part of the **Global Biofuel Alliance**, the meeting presents an opportunity **to expand the alliance and promote biofuels as a means to reduce greenhouse gas emissions**.

International Sugar Organization (ISO)

- It is a **UN-affiliated body with HQ in London**.
- ISO has about **85 countries** as members, covering almost 90% of sugar production in the World.
- It is mandated to bring **major sugar producing, consuming and trading nations together** to bring mutual understanding and progressive approach in dealing with issues pertaining to the sugar sector.
- ISO has also been **working on biofuels**, especially **ethanol**, as sugarcane is the second major feedstock for ethanol production in the world.

Dairy Industry Faces Surplus of Milk Powder

News Excerpt:

Indian dairy farmers are grappling with the challenge of **surplus skimmed milk powder (SMP)**.

About Skimmed Milk Powder:

- SMP is a **dairy product** made by **evaporating the water** from **skim milk**.
- **Cow milk** typically contains **3.5% fat** and **8.5% solids-not-fat (SNF)**, while **buffalo milk** has around **6.5% fat** and **9% SNF**.
- **Fresh milk is perishable**, so dairies extract and store their solids (fat and SNF) by separating the cream and drying the skimmed milk.
- **During peak production** or "flush" seasons, dairies convert excess milk into **butter, ghee, and SMP**, which are then recombined with water to produce liquid milk in lean seasons when animal milk production drops.
- **The flush season varies**: in the South and Maharashtra, it spans from **July to December**, whereas in the **North and Gujarat**, it lasts from **September to March**, aligning with buffalo calvings.
- **From 100 litres of cow milk**, dairies can produce roughly **8.75 kg of SMP** and **3.6 kg of ghee**.
- **Cooperative and private dairies** have accumulated an estimated **300,000-325,000 tonnes of SMP** at the beginning of the **production year (July to June)**.

Causes of SMP Surplus:

- The surplus occurs when dairies collect more milk than usual, leading to **excess production of SMP** and **butter/ghee** without sufficient demand.
- Annually, Indian dairies produce **550,000-600,000 tonnes of SMP**, with about **400,000 tonnes** used **during lean seasons**.
- The remaining **150,000-200,000 tonnes** are used in products like **ice cream, biscuits, and baby formula**.
- **In 2023-24, continuous milk supplies**, even during traditionally lean months (April-June), **reduced SMP consumption** for reconstitution to 250,000 tonnes, leaving dairies with **surplus stocks** of 300,000-325,000 tonnes at the start of the new flush season, potentially worsening the surplus.

Impact of SMP Surplus:

- The surplus has caused **prices to drop**, with **cow SMP fetching Rs 200-210 per kg** and **yellow butter Rs 335-340 per kg**.
- Despite a **strong market for milk fat** in India, especially during festive months, the excess SMP remains problematic.

Potential Solutions:

- Dairy traders suggest **exporting the excess SMP**, though global price drops make this unviable without government subsidies.
- **Indian Dairy Association** has proposed creating a **50,000-100,000-tonne buffer stock of SMP** to **stabilize prices** and support both producers and consumers.

- **Long-term**, the dairy industry needs to **find markets for SMP** or its components (proteins, carbohydrates, and minerals) due to increasing milk fat demand and a preference for rearing cows, which yield more milk and produce more SMP compared to buffaloes.

Govt. to Promote Climate-Resilient Farming

News Excerpt:

The **Union government** is set to introduce a **framework** aimed at promoting **climate-resilient agriculture** in **50,000 villages** within **310 climatically-vulnerable districts**.

National Program on Climate Resilient Agriculture

- This initiative is part of a broader **National program** on climate-resilient agriculture spearheaded by the **Ministry of Agriculture and Farmers' Welfare**.
- The **Indian Council of Agricultural Research** has developed over **2,000 such varieties**, including both **abiotic and biotic stress-tolerant types**, to enhance food production.
- It is likely to include measures such as encouraging the cultivation of **less water-intensive crops**, **conserving local water sources**, and **monitoring fertilizer usage**.

Highly Vulnerable Districts

- A total of **310 districts** across **28 states and Union Territories (UTs)** in India have been classified as **highly vulnerable** under the National Innovations on Climate Resilient Agriculture (NICRA) initiative.
- **Uttar Pradesh tops the list** with the most vulnerable districts, featuring **22 districts with "very high" vulnerability** and 26 districts considered "highly" vulnerable.
- Following are **Rajasthan with 17 districts, Bihar with 10, and Kerala with 8**.
- The initiative will focus on these **districts over a five-year period**, with most of the funding expected to come from existing schemes.

National Innovations in Climate Resilient Agriculture (NICRA)

- **In 2011**, the **Indian Council of Agricultural Research (ICAR)**, under the **Ministry of Agriculture and Farmers Welfare**, launched a flagship network project called '**National Innovations in Climate Resilient Agriculture**' (NICRA).
- This initiative focuses on **strategic research for adaptation and mitigation**, **demonstrating technologies** in farmers' fields, and **raising awareness** among farmers and stakeholders to reduce the impacts of **climate change on agriculture**.

- The **strategic research component** targets several key areas:
 - Identifying the **most vulnerable districts** and **regions**.
 - Developing **crop varieties** and **management practices** for **adaptation** and **mitigation**.
 - **Assessing climate change impacts** on **livestock, fisheries, and poultry** and **identifying adaptation strategies**.

INTERNATIONAL RELATIONS

Blue Line

News Excerpt:

The United Nations has expressed grave concerns about intensified clashes along the Lebanon-Israel frontier, known as the Blue Line.

About Blue Line:

- The Blue Line is a border demarcation between Israel and Lebanon established by the United Nations in 2000. Its primary **purpose** is to confirm **Israel's withdrawal from Lebanon after its occupation**, which lasted from 1982 to 2000.
- **Establishment:** The **United Nations** drew the Blue Line **following Israel's withdrawal from southern Lebanon in May 2000**. The UN aimed to verify that Israel had fully withdrawn from Lebanese territory in accordance with **UN Security Council Resolution 425**.
- **Purpose:** It serves as a **line of withdrawal** rather than an internationally recognized border. Its main goal is to confirm Israel's compliance with the resolution, not to act as a formal border agreement between the two countries.



- **Controversies:** The Blue Line has been a source of tension and occasional conflict. Disputes often arise

regarding specific points along the line, especially in areas like the Shebaa Farms, which Lebanon claims but the UN recognizes as part of the Syrian Golan Heights, currently occupied by Israel.

- **UNIFIL:** The **United Nations Interim Force in Lebanon** (UNIFIL) monitors the Blue Line to help maintain peace and security in the region. UNIFIL patrols the area, helps prevent conflicts, and reports any violations of the line.
- Overall, while the **Blue Line is not an official international border**, it is a crucial tool for maintaining a level of stability and monitoring the cessation of hostilities between Israel and Lebanon.

Enhanced India-Austria Partnership

News Excerpt:

The **Indian Prime Minister** paid an **official visit** to **Austria** from **July 9-10, 2024**.

More About the News:

This marked the **first visit** by an **Indian Prime Minister** to **Austria** in **41 years**, coinciding with the **75th anniversary of diplomatic relations** between the two countries.

Shared Values and Enhanced Partnership

- Both countries emphasized the shared values of **democracy, freedom, international peace and security**, and a **rules-based international order** with the **UN Charter** at its core.
- They reiterated their commitment to deepening and widening **bilateral, regional, and international cooperation** for a more **stable, prosperous, and sustainable world**.
- They emphasized a **future-oriented bilateral sustainable economic and technology partnership**, covering **new initiatives and joint projects** in green and digital technologies, infrastructure, renewable energy, water management, life sciences, smart cities, mobility, and transportation.
- **Diplomatic relations** between India and Austria were established on 10 November **1949**.

Relations Between India & Austria:

Economic Cooperation:

- **Indo-Austria Bilateral Trade:** Total bilateral trade for 2023 (January-December) was **2.93 USD billion**.
- **Indian key exports to Austria:** Electronic Goods, Apparels, Textile, Footwear, Rubber articles, Vehicles & Railways parts, Electrical machinery and Mechanical appliances.
- **India's key imports from Austria:** Machinery, Mechanical appliances, Railway parts, Iron and Steel.
 - In February 2024, the **India-Austria Startup Bridge** was launched to foster innovation and entrepreneurship between the two countries.

Cultural Relations:

- Indo-Austrian cultural ties **date back to the 16th century** when Balthasar Springer traveled from Tyrol to India with the third Portuguese fleet in 1505. The **Austrian tradition of Indology** flourished notably between 1825-1920, characterized by distinguished philologists and archaeologists.
- **Sanskrit teaching at Vienna University** commenced in 1845, and a significant milestone was reached in 1880 with the establishment of **an independent chair for Indology**. After a brief interruption from 1938-1955, this chair evolved into **the Institute for South Asian, Tibetan, and Buddhist Studies** at the University of Vienna.
- The visits of India's philosopher-poet and Nobel Laureate **Rabindranath Tagore to Vienna in 1921 and 1926** were pivotal in fostering cultural and intellectual exchange between India and Austria.
- **Renowned artists** from India and Austria have **performed** in each other's countries for several decades.
- Austria's picturesque locales have also **attracted several Bollywood film** productions.
- There is considerable interest in contemporary **Indian literature and theatre** in Austria. **Ayurveda**, the traditional Indian system of medicine, enjoys widespread recognition and practice in Austria. The holistic benefits of **Yoga for healthcare** and well-being have led to the establishment of numerous Yoga schools in Austrian cities.

Diaspora:

- Austria is home to an estimated over **31,000 Indians**, with a roughly equal distribution between Non-Resident Indians (NRIs) and Persons of Indian Origin (PIOs).

Multilateral Cooperation

- Both countries reiterated their commitment to comprehensive **reforms of the United Nations**, including its **Security Council**, with India supporting **Austria's UNSC candidature** for the **term 2027-28**, and Austria supporting **India's candidature** for the **period 2028-29**.
- The **Indian Prime Minister invited Austria** to join the **International Solar Alliance**, which recently welcomed its **100th member**.

India Hosts BIMSTEC Foreign Ministers**News Excerpt:**

India hosted the **BIMSTEC Foreign Ministers' Retreat**, which took place amidst ongoing **turmoil in Myanmar**.

More About the News:

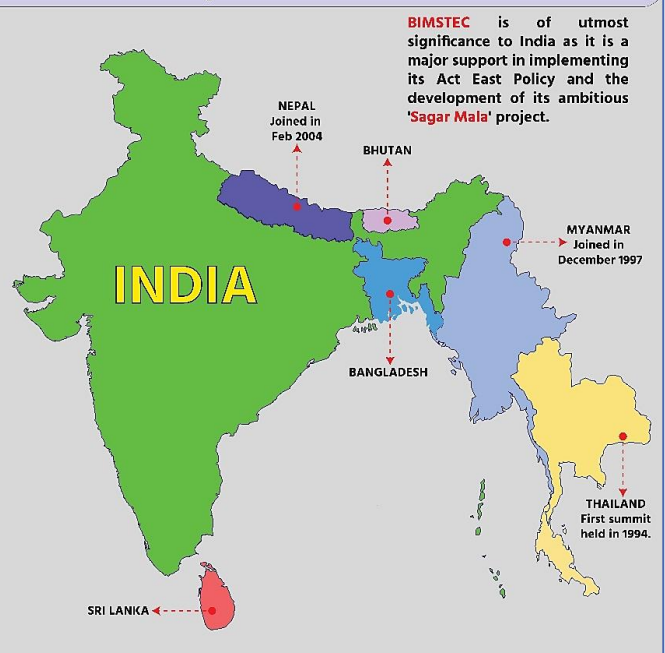
- **The Indian External Affairs Minister** emphasized the need for the **seven-member Bay of Bengal Initiative for Multi-Sectoral Technical and Economic**

Cooperation (BIMSTEC) to address regional challenges internally.

- The minister highlighted the **urgency of finding solutions** within the **BIMSTEC framework**, especially given the evolving **global and regional landscape**.

About BIMSTEC Retreat

- The **External Affairs Minister** hosted his counterparts for the **second BIMSTEC Foreign Ministers' Retreat** in **New Delhi** on July 11-12, 2024.
- The Retreat offers an opportunity for the Foreign Ministers of BIMSTEC countries to discuss, in an **informal setting**, ways to **broaden and deepen cooperation** across various sectors, including **security, connectivity, trade and investment**, and **people-to-people contacts** in the Bay of Bengal region.
- The **first edition** of the BIMSTEC Foreign Ministers' Retreat was held in **Bangkok, Thailand**, on July 17, 2023.

BIMSTEC comprises of 7 Member Countries.**BIMSTEC**

- The **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** is a **regional organization** established on **June 6, 1997**, with the signing of the **Bangkok Declaration**.
- **Initially called BIST-EC (Bangladesh-India-Sri Lanka-Thailand Economic Cooperation)**, the organization expanded its membership with **Myanmar joining in 1997** and **Bhutan and Nepal in 2004**, and it was **renamed BIMSTEC**.
- The **primary goal** of this regional group was to **promote economic cooperation** among **countries bordering the Bay of Bengal**.
- **In 2014**, it was decided to establish the **BIMSTEC Secretariat in Dhaka, Bangladesh**, providing an institutional framework for enhancing cooperation.

- Initially, **BIMSTEC's cooperation** focused on **six sectors in 1997: trade, technology, energy, transport, tourism, and fisheries.**
- In **2008**, this expanded to include **agriculture, public health, poverty alleviation, counter-terrorism, environment, culture, people-to-people contact, and climate change.**

Disturbance in Myanmar

- The meeting's context was underscored by the situation in **Myanmar**, where the **military junta** faces setbacks against **Ethnic Armed Organizations (EAOs).**
- The **instability in Myanmar** threatens several **developmental and connectivity projects** intended to strengthen ties among BIMSTEC members, including Nepal, Bhutan, India, Bangladesh, Myanmar, and Thailand.
- Currently, **India is offering aid to displaced populations** and **Myanmar military personnel seeking refuge in Mizoram.**
- The Minister reiterated the shared priority of **countering transnational crimes**, including **cybercrime, narcotics, and illegal arms**, in cooperation with **Myanmar and Thailand.**

China's Vision for a Pan-Asian Railway Network

News Excerpt:

China is pursuing an ambitious plan to connect its southern city of **Kunming with Singapore** through a network of railways across Southeast Asia under its Belt and Road Initiative (BRI).

Progress and Challenges:

- The proposed network consists of **three main routes**:
 - Western line:** Kunming to Singapore via Myanmar and Thailand
 - Central line:** Through Laos and Thailand
 - Eastern line:** Via Vietnam, Cambodia, and Thailand
- An additional line would link **Bangkok to Malaysia and Singapore, a crucial global trade hub.**
- Currently, **only the Laos-China section is operational, having opened in 2021.**

Other sections face various obstacles:

- Malaysia's East Coast Rail Link (ECRL):** This 665-km project, connecting Kota Bharu to Port Klang, has faced funding issues and political controversies. It's now expected to be completed by 2027.
- Thailand's section:** Delayed due to high costs and government hesitation, it's projected to finish in 2028 but may face further setbacks.

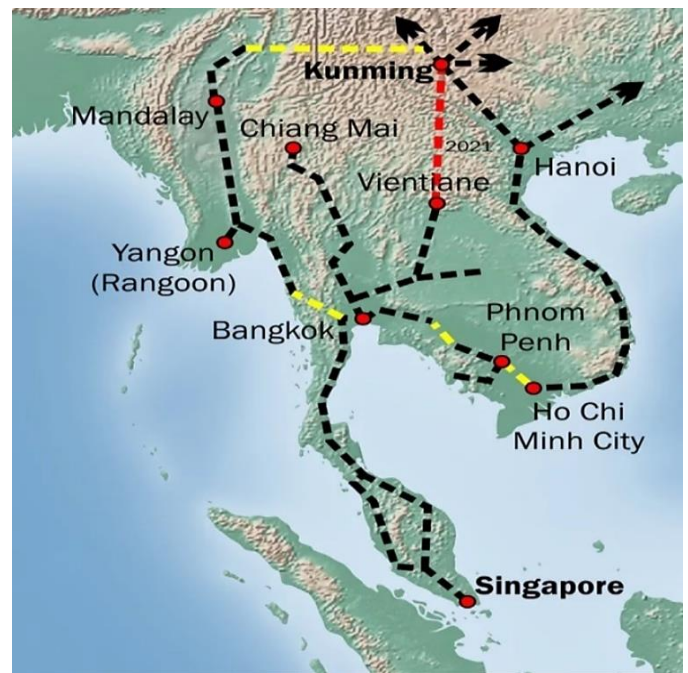
Technical and Economic Concerns

- Track width inconsistencies** across countries may hinder seamless cargo transportation.

- Air travel remains faster** and cheaper for passenger transport between Kunming and Singapore.
- Maritime shipping** is often more **economical** for cargo movement.

China's Strategic Interests

- Strengthening economic ties:** China is already ASEAN's largest trading partner, with bilateral trade reaching \$911.7 billion in 2023.
- Expanding influence:** The railway project allows China to increase its presence in Southeast Asia.
- Countering regional tensions:** Infrastructure investments may help offset concerns about China's territorial claims in the South China Sea.



Japan and Philippines Sign Defense Pact

News Excerpt:

Japan and the **Philippines** have signed a significant **defence pact**, the **Reciprocal Access Agreement (RAA)**, allowing Japanese forces to be deployed to the Philippines for **joint military exercises**, including live-fire drills.

More about the news:

- This development marks a **notable shift for the two nations**, given the **historical context** of Japan's brutal occupation of the Philippines during **World War II.**
- The agreement reflects their evolving alliance in the face of an increasingly **assertive China.**

Reciprocal Access Agreement (RAA):

- The RAA was signed by the **Philippine Defense Secretary** and **Japanese Foreign Minister** during a ceremony in **Manila.**
- The agreement, which also permits **Filipino forces** to enter **Japan for joint combat training**, will take effect following ratification by both countries' legislatures.

- This defence pact is **Japan's first in Asia**, following similar agreements with **Australia in 2022** and **Britain in 2023**.

Japan's New Strategy:

- Japan has been boosting its **security and defence capabilities**, including acquiring a **counter-strike capability**, which marks a departure from Japan's postwar focus on **self-defence**.
- Japan plans to **double its defence spending by 2027**, aiming to become the **world's third-largest military spender** after the **United States** and **China**.

United States Military Alliance

- The United States has also been bolstering its **military alliances** in the **Indo-Pacific** to counter **China** and **reassure its Asian allies**.
- Both **Japan** and the **Philippines** are **treaty allies of the U.S.**, and the **U.S. president** has reaffirmed Washington's "**ironclad**" **commitment** to defend both nations.

India Sets Priorities for the Colombo Process

News Excerpt:

India has unveiled an **action plan** addressing several key areas for **regional cooperation** under the **Colombo Process**, a consultative forum comprising **12 Asian nations**.

More About the News:

- **India chaired its first meeting** as the head of the **Colombo Process** at the **Permanent Representative Level Meeting** held at the **International Organization for Migration (IOM) Headquarters** in **Geneva**.
- India's assumption of the **chairman**
- **ship of the Colombo Process** is a landmark development, highlighting its **growing influence** and **leadership in global migration governance**.

Key Priorities and Initiatives:

India's **strategic priorities for the Colombo Process** from **2024 to 2026** include:

- Ensuring the **long-term financial health** and **sustainability** of the Colombo Process to maintain its effectiveness.
- **Expanding membership** by including **new member states** and **observers** to enrich dialogue and diversify perspectives within the Process.
- **Enhancing technical-level collaborations** among member states to better address emerging migration challenges.
- Implementing a **structured rotation system** for the **chairmanship** to ensure equitable representation and leadership opportunities for all member states.
- Conducting a **comprehensive regional review** of the GCM to align regional efforts with global migration frameworks.

- Strengthening **dialogues with other regional processes**, such as the **Abu Dhabi Dialogue (ADD)**, to foster greater regional cooperation on migration issues.

The Colombo Process:

- It is a **Regional Consultative Process** comprising **12 member states from South and Southeast Asia**, primarily countries of origin for migrant workers.
- The **12 member states** include **Afghanistan, Bangladesh, Cambodia, China, India, Indonesia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand, and Vietnam**.
- This forum plays a pivotal role in **facilitating the exchange of best practices for managing overseas employment**.
- The Process promotes **safe, orderly, and regular migration**, which is essential for protecting the rights and welfare of migrant workers.
- The process is non-binding, and decision-making is based on consensus.
- The Process is coordinated through Permanent Missions of Member States at the UN in Geneva.
- India has been a member of the Colombo Process since its inception in 2003.

Revised SAARC Currency Swap Framework

News Excerpt:

The **Reserve Bank of India (RBI)**, in agreement with the Government of India, has introduced an updated **Currency Swap Arrangement Framework** for **SAARC countries**, effective from **2024 to 2027**.

Currency Swap:

- ◀ A currency swap is an agreement between **two cross-border entities** where one of them agrees to provide a **loan to another in a foreign currency**.
- ◀ The repayment takes place in a different currency at a fixed date and an exchange rate. The **interest rate** charged on such loans is usually **lesser than that available in the foreign market**.

SAARC Currency Swap Facility

- **SAARC Currency Swap Facility** was initially launched on **November 15, 2012**.
- This framework aims to provide a **line of funding** to address **short-term foreign exchange needs** or **balance of payments crises** until long-term solutions are implemented or the issue is resolved in the short term.
- Under this Facility, the RBI offers **swaps in USD, Euro, or INR** to each SAARC member country based on their **two-month import requirements**, with a **total cap of US\$ 2 billion**.

Revised Framework:

- The **revised framework for 2024-27** includes the introduction of a **separate INR Swap Window**, offering various concessions for **swap support in Indian Rupee**.
- The **total corpus for Rupee support** is set at **Rs 250 billion**.
- Additionally, the RBI will maintain **swap arrangements in US dollars and Euros** through a **separate US Dollar/Euro Swap Window**, with a **total corpus of US\$ 2 billion**.
- This Currency Swap Facility will be accessible to **all SAARC member countries**, contingent upon the **signing of bilateral swap agreements**.

South Asian Association for Regional Cooperation (SAARC):

- SAARC was established by signing its **Charter in Dhaka on December 8, 1985**.
- The organization consists of **eight member countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka**.
- The **Secretariat** of the Association was set up in **Kathmandu, Nepal**, on **17 January 1987**.

The Resolve Tibet Act

News Excerpt:

The United States Congress passed the **Promoting a Resolution to Tibet-China Dispute Act**, better known as the **Resolve Tibet Act**.

Key Provisions of the Act:

- **Countering Disinformation:** Authorizes funds to combat Chinese disinformation about Tibet, including its history, people, institutions, and the Dalai Lama.
- **Challenging Chinese Claims:** Rejects China's assertion that Tibet has historically been a part of China. Urges China to engage in direct and meaningful dialogue with the Dalai Lama or his representatives, as well as democratically elected Tibetan leaders, without preconditions, to seek a resolution to differences.
- **Human Rights and Self-Determination:** Highlights the Tibetan people's right to self-determination and human rights, citing China's obligations under international covenants.
- **Recognition of Tibetan Identity:** Recognizes and addresses the multi-faceted socio-cultural identity of Tibetans, including their historical, cultural, religious, and linguistic distinctiveness.

Different from previous legislations:

- **The Resolve Tibet Act** is the third notable piece of legislation that the US has taken regarding Tibet. It follows two notable previous legislations.
 - **The Tibetan Policy Act or TPA (2002),**

- **The Tibetan Policy & Support Act or the TPSA (2020).**
- **Tibetan Policy Act (TPA) of 2002:** The TPA acknowledged Tibet as part of China but raised concerns about the treatment of Tibetans and encouraged dialogue between China and the Dalai Lama without endorsing Tibetan independence or sovereignty.
- **Tibetan Policy & Support Act (TPSA) of 2020:** The TPSA reinforced the call for dialogue between China and Tibetan leaders towards a negotiated agreement. It emphasized international support for Tibetan autonomy and clarified that matters concerning the Dalai Lama's succession were the business of Tibetan Buddhists, not China's.

The Hannibal Directive

News Excerpt:

The Hannibal Directive has resurfaced due to its alleged use by the Israeli Defense Forces (IDF) in response to a significant attack by Hamas.

What is the Hannibal Directive?

- The **Hannibal Directive** refers to an **IDF operational policy aimed at preventing the capture of Israeli soldiers by enemy forces**.
- The core of this policy involves **taking extreme measures**, including using force that might endanger the captive soldier, to thwart abduction attempts.
- **The directive's primary mission is to rescue captured soldiers at all costs**, which could mean risking the lives of those soldiers to prevent them from being used in politically sensitive prisoner swaps.

Origin and Historical Context

- The Hannibal Directive **was formulated in response to the 1985 Jibril Agreement**, where **1,150 Palestinian prisoners were exchanged for three Israeli soldiers captured by the Popular Front for the Liberation of Palestine-General Command (PFLP-GC)**.
- In mid-1986, following an attempted abduction of Israeli soldiers by Hezbollah, **Yossi Peled, then head of the IDF's Northern Command, drafted the operational order that evolved into the Hannibal Doctrine**.
- Named after the **Carthaginian general Hannibal, who is said to have taken poison to avoid capture by the Romans**.
- The directive was designed to ensure that **Israeli soldiers would not become pawns in prisoner exchanges**.
- Initially, **the directive recommended the use of light arms to stop abductors, but over time, it has been interpreted more broadly, including the use of heavier firepower**.

Controversy and Criticism

- The Hannibal Directive has sparked considerable controversy due to its perceived disregard for human life. Critics argue that the **policy prioritizes preventing abductions over the safety of captured soldiers** and nearby civilians.
- Despite criticism, **many Israelis support the Hannibal Directive**, believing that its extreme measures are justified to prevent soldiers from being captured and used as bargaining chips in prisoner exchanges.

Operation Azm-e-Istehkam

News Excerpt:

In the latest attack by Tehrik-i-Taliban Pakistan (TTP) on a military base in Bannu, Khyber Pakhtunkhwa province of **Pakistan**, eight soldiers were killed and numerous others injured.

More details about the news:

- "Operation **Azm-e-Istehkam**" means '**Resolve for Stability**' in the region, aiming to temporarily curb the growing activities of the TTP in the tribal areas.
- The Pakistani government initiated Operation Azm-e-Istehkam as a **counter-insurgency** measure in June 2024.
- In addition to military measures, the mission will involve **socioeconomic development aimed at discouraging extremism**.

ENVIRONMENT

Eco-friendly Ionic Liquid

News Excerpt

Researchers at Institute of **Advanced Study in Science and Technology (IASST), Guwahati** have identified **Ionic Liquids (ILs)**, which can be promising sustainable alternatives to the toxic chemicals currently in use for the silk protein extraction process.

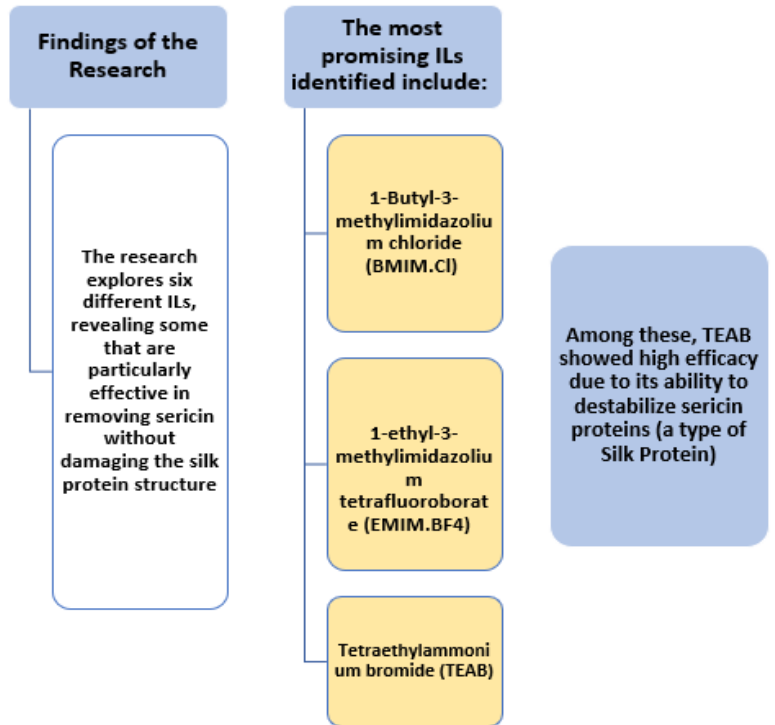
Conventional Silk extraction:

- The conventional process involves harmful substances like sodium carbonate, sodium hydroxide, sulfuric acid, and lithium bromide to extract silk proteins, fibroin, and sericin from raw silk fibres.
- This is a crucial step in transforming cocoons into silk.

Findings of the Research

Significance of the Findings

- The eco-friendly approach offers a **sustainable alternative to traditional chemical methods and facilitates efficient sericin extraction from both mulberry (Bombyx mori) and non-mulberry silks, such as Muga (Antheraea assamensis) and Eri (Philosamia ricini), indigenous to Northeast India.**



- The ILs identified are effective in removing sericin without damaging the structural integrity of silk proteins, **ensuring high-quality silk production.**
- This research marks the first instance of using ILs for sericin extraction from non-mulberry silks, broadening the potential applications of these unique fibres with enhanced production.

Type of silk	Color of silk fibre	Species	Preferred host plant	Silk rearing regions
Mulberry silk	Yellow/cream	Bombyx mori	Mulberry	Andhra Pradesh, Tamil Nadu, Karnataka
Muga silk	Golden	Antheraea assamensis	Champa	Assam, Meghalaya, Manipur, Nagaland, Arunachal Pradesh
Tussar silk	Copper-brown	Antheraea mylitta	Arjun	Bihar, Jharkhand, West Bengal
Eri silk	Green	Attacus ricini	Castor	Assam, Meghalaya, Manipur, Nagaland, Arunachal Pradesh

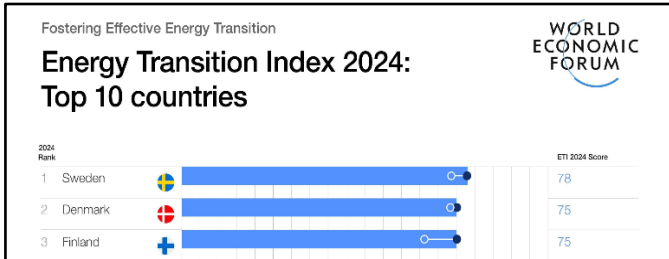
Energy Transition Index

News Excerpt:

India has been placed **63rd** on the **Global Energy Transition Index** published by the **World Economic Forum (WEF)**.

What is the Energy Transition Index?

- The World Economic Forum's Energy Transition Index (ETI) is a composite indicator that measures a country's readiness and progress in transitioning to a more **sustainable, secure, and equitable** energy system.



Key highlights of the Index

Sweden leads the ranking, followed by Denmark, Finland, Switzerland, and France in the top five.

China holds the 20th position

While Energy Transition Index scores have reached a new high, the pace of the transition has slowed in recent years.

India's efforts towards energy transition:

- The WEF highlighted **India's efforts to utilize energy for income generation and support micro-enterprises** through the **productive use of renewable energy**.
- India's initiatives in **energy equity, security, and sustainability** were **praised by the WEF**, noting that these efforts could serve as models for other nations.
- The WEF commended India's achievements in **clean energy infrastructure**, with **renewables and biomass** accounting for **42% of its power generation capacity**, making it the **fourth-largest renewables market** in the world.
- India is advancing the adoption of **electric vehicles (EVs)** and **green hydrogen production**, with **annual investments nearing \$10 billion**.
- India's per capita emissions are 1.7 tonnes of CO₂**, significantly lower than the **global average of 4.4 tonnes per capita**.

World Economic Forum (WEF)

- WEF is the International Organization for **Public-Private Cooperation** based in **Geneva, Switzerland**.
- It was **established in 1971** as a not-for-profit foundation.
- It provides a global, impartial platform to foster meaningful connections among stakeholders, build trust, and promote cooperation and progress.

- It engages leaders from political, business, academic, and civil society sectors to shape global, regional, and industry agendas.

Kenya Plans to Eliminate the Invasive Indian House Crow

News Excerpt:

The Indian house crows, known for stealing food from tourists, displacing native bird species, and raiding crops, have prompted the Kenyan government to declare war on them.

Indian House Crow:

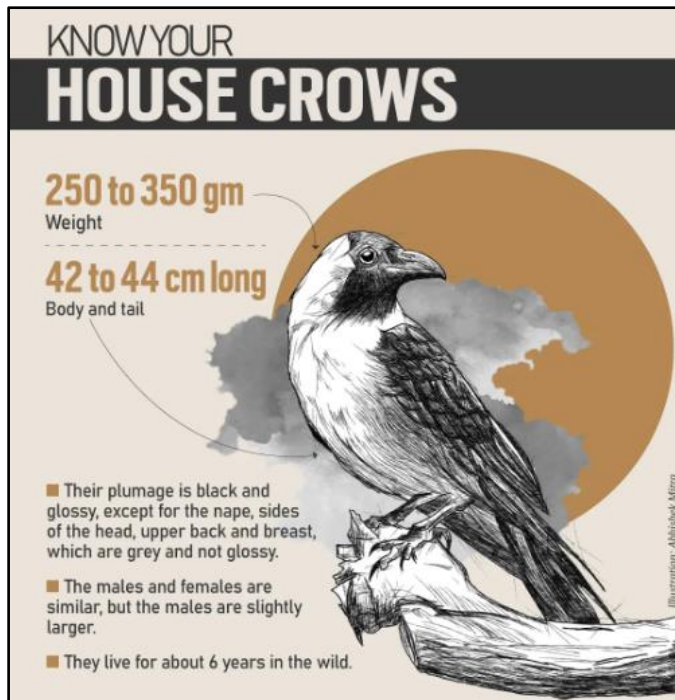
- The Indian house crow is **native to India and other parts of Asia and the Middle East**.
- They are highly **intelligent birds, capable of remembering faces, using tools, and communicating in sophisticated ways**.
- Their **adaptability to new environments, flexibility in diet, and lack of significant predators** have contributed to their rapid population growth in East Africa.

Historical Context and Population Explosion

- They were introduced to East Africa in the 1890s, likely via ships from the Indian subcontinent or by sailors who kept them as pets.
- The crows' population quickly exploded, leading **Zanzibar to declare them pests by 1917 and offer bounties for their elimination**.
- Despite these efforts, **the crows spread throughout the region, reaching Kenya by 1947**.
 - Today, the population in Kenya is estimated to be between **750,000 and 1 million**.

Impact of Crow on Local Ecosystems and Communities:

- The proliferation of the Indian house crow (*Corvus splendens*) has significantly impacted local ecosystems in Kenya and other East African countries.
- These crows are aggressive predators**, known to attack indigenous birds, kill them, and consume their eggs.
 - Their teamwork in **raiding nests has displaced several native bird species, including scaly babbblers, pied crows, sunbirds, weaver birds, and waxbills**.
- The crows are also a **threat to livestock and agriculture**. They have been known to kill newborn or sick calves and goats, and **they prey on small reptiles, amphibians, mammals, and insects**.
 - The crows' raids on fruit trees and crops such as wheat, maize, millet, rice, and sunflowers result in significant losses.



- The **hospitality industry** suffers, too, as crows frequent lawns and hotels in search of food, creating a mess and disturbing tourists with their incessant cawing.
 - Their nests in air conditioning units and around swimming pools further exacerbate the problem.

Zoological Survey of India releases fauna checklist

News Excerpt:

The Zoological Survey of India (ZSI) has released a checklist of India's fauna, covering 104,561 species of animals.

More details about the news:

- The list was released on the occasion of **the 109th foundation day of the Zoological Survey of India in Kolkata.**
- A **Fauna Checklist portal** for the comprehensive checklist was also launched on the occasion.

Fauna Checklist Portal:

- The faunal checklist will be an invaluable reference for taxonomists, researchers, academicians, conservation managers, and policymakers.
 - It comprises **121 checklists of all known taxa** covering **36 phyla**. Endemic, threatened, and scheduled species have also been included in the list.
- Globally, there are **11,888 species of birds** that are grouped into 36 orders and 247 families.

Zoological Survey of India (ZSI)

- The Zoological Survey of India (ZSI) is the premier **taxonomic research organization** in India.
- It was established on **1 July 1916** to **promote surveys, exploration and research** leading to **advancement of**

our knowledge of various aspects of the **exceptionally rich animal life of India.**

- Since its inception, the ZSI has been documenting the diversity and distribution of the fauna of India towards carrying out its mandate of conducting exploration-cum-taxonomic-research programmes.

UNESCO Designates 11 New Biosphere Reserves

News Excerpt:

UNESCO has recently approved the designation of 11 new biosphere reserves across 11 countries, marking a significant advancement in global efforts to preserve biodiversity and foster sustainable development.

More about the news:

- For the first time, **Belgium and Gambia have been included**, alongside the establishment of **two transboundary biosphere reserves.**
- These additions bring the total number of sites in the World Network of Biosphere Reserves to **759 across 136 countries**, covering a combined area of **37,400 km²**, equivalent to the size of the Netherlands.
- These new designations are a testament to UNESCO's commitment to addressing the global biodiversity crisis and promoting sustainable development.

UNESCO Biosphere Reserve:

- A UNESCO Biosphere Reserve **is a designated area that aims to balance biodiversity conservation and sustainable development.**
- These reserves are part of the **World Network of Biosphere Reserves, established under UNESCO's Man and the Biosphere (MAB) Programme.**
- The reserves encompass terrestrial, marine, and coastal ecosystems.
 - They are meant to function as **living laboratories for sustainable development, showcasing innovative approaches to conserving biodiversity while fostering economic and human development.**

Significance of Recognition:

- **Conservation of Biodiversity:** Biosphere reserves help protect various species and their habitats, contributing to global biodiversity conservation.
- **Sustainable Development:** They promote sustainable development practices, integrating conservation with socio-economic development.
- **Research and Education:** These reserves serve as sites for scientific research and education, helping to advance knowledge on sustainable living.
- **Community Involvement:** Local communities are involved in the management and development processes, ensuring that their needs and knowledge are integrated.

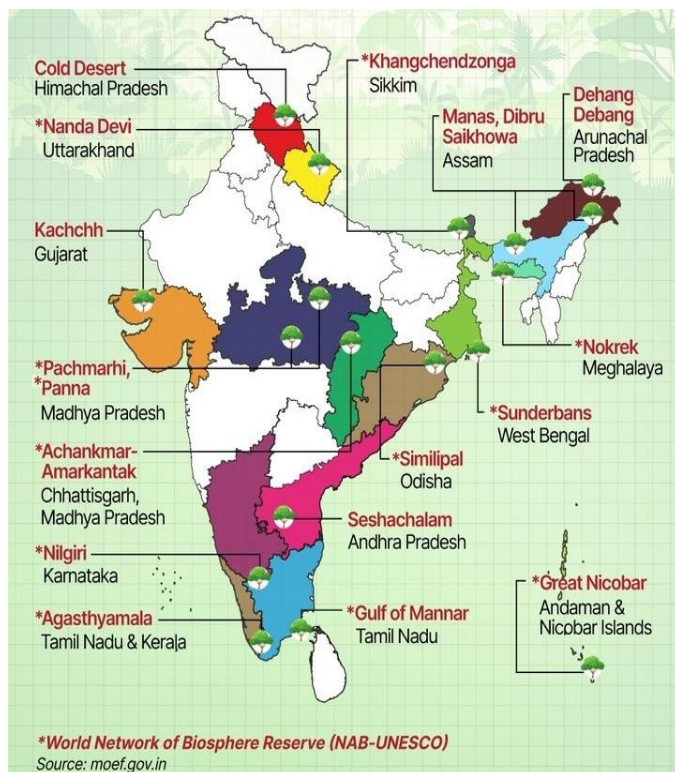
- **Global Networking:** Being part of a global network, biosphere reserves benefit from shared knowledge, resources, and collaborative efforts.

Biosphere reserves recognised are listed in the table below.

Biosphere Reserve	Location	Distinct Feature
Kempen-Broek	Belgium, Kingdom of the Netherlands	Wetlands transformed into farmlands since the 19th century but the area retains remnants of its marshes, punctuated by ponds, open marshlands and bog forests.
Darién Norte Chocoano	Colombia	Biodiversity bridge , significant archaeological sites, home to Indigenous and Afro-Colombian people
Madre de las Aguas	Dominican Republic	Diverse topography with critical habitats for endangered species such as Sparrowhawk (Buteo ridgwayi)
Niumi	Gambia	Pristine mangrove forests include the UNESCO World Heritage site Kunta Kinteh Island.
Colli Euganei	Italy	Volcanic hills, the largest thermal basin in Europe, sustainable agriculture and ecotourism
Julian Alps Transboundary	Italy, Slovenia	Alpine mountains, karst plateaux, diverse wildlife, extensive participatory planning
Khar Us Lake	Mongolia	Diverse ecosystems, sustainable animal husbandry, heritage-based ecotourism
yApayaos	Philippines	Apayao River watershed, Indigenous Cultural Communities, Lapat system (practice regulating the use of natural resources and protection of the environment.)
Changnyeong	Republic of Korea	Includes Mount Hua Wang and Upo Wetland , diverse agriculture and conservation efforts
Val d'Aran	Spain	North-facing valley, diverse climates, resilient rural development
Irati	Spain	Second-largest beech forest in Europe, community-driven conservation

Biosphere reserves in India:

India has 18 Biosphere reserves, with 12 biosphere reserves identified under the UNESCO MAB Programme.



State of Global Air Report

News Excerpt:

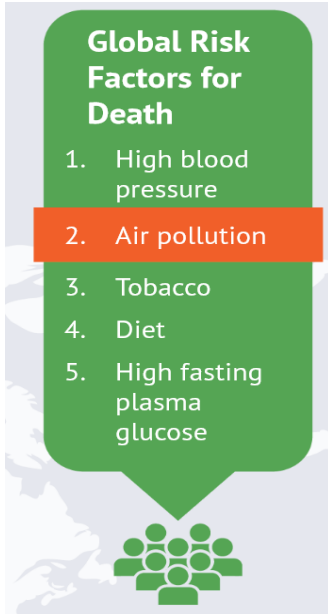
According to the recently released **State of Global Air Report**, air pollution was **responsible for 8.1 million deaths worldwide in 2021**, with China and India contributing more than half of this global burden.

About the 2024 Report:

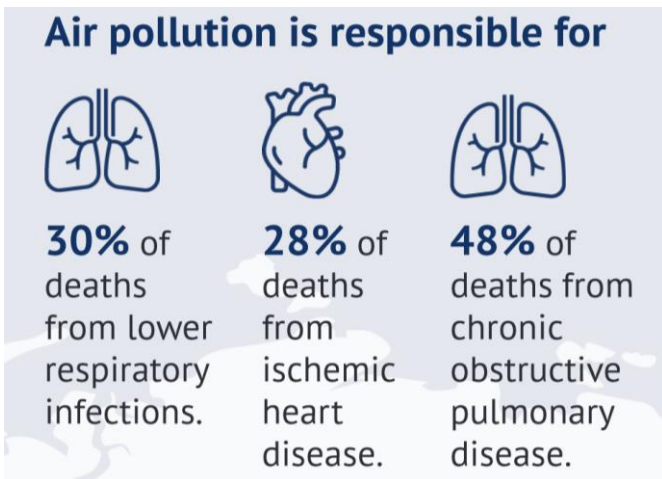
- The State of Global Air is a collaboration between the **Health Effects Institute** and the **Institute for Health Metrics and Evaluation's Global Burden of Disease project.**
- **This is the fifth edition of the State of Global Air Report.**
 - Produced in partnership with **UNICEF**, this edition includes a special focus on children's health, underscoring the critical impact of air quality on them.
- The report provides detailed information on exposures to and health impacts of common air pollutants, such as fine particulate matter (PM2.5), ozone, and, **for the first time, nitrogen dioxide, spanning the years 1990 to 2021.**
- The State of Global Air initiative offers a comprehensive resource that complements other information sources on air pollution and health.

Key highlights of the report:

- China accounted for 2.3 million deaths, and India for 2.1 million deaths due to air pollution.
- Air pollution is one of the leading causes of death globally, **second only to high blood pressure.**
- **It surpasses tobacco consumption as a primary cause of death and disability.**
- Of the total deaths in 2021, **700,000 were children under the age of five.** "Air pollution poses an enormous and growing public health challenge."



India's Struggle with Air Pollution:



- India faces a severe impact from air pollution, with 2.1 million deaths in 2021.
- India and China account for 55% of the global deaths attributed to air pollution.
- Besides particulate matter, **Indians are also significantly exposed to high levels of ozone.**
 - **Short-term exposure to ozone can exacerbate asthma** and other respiratory symptoms.
 - Long-term exposure is linked to **Chronic Obstructive Pulmonary Disease (COPD)**, which inflames the lungs and obstructs airflow.
- In 2021, 489,000 global deaths were attributed to ozone exposure, with nearly 50% (237,000 deaths) occurring in India.
 - The country also reported the highest number of pollution-linked deaths among children under five, with at least 169,400 deaths in 2021.

State of Global Air

- The State of Global Air is a research and outreach initiative aimed at providing accurate, meaningful, and up-to-date information about global air quality and its health impacts.
- This program is a collaboration between the **Health Effects Institute** and the **Institute for Health Metrics and Evaluation's Global Burden of Disease project**, which offers citizens, journalists, policymakers, and scientists **access to high-quality, objective data on air pollution and its effects on health.**
- The project is funded by the **Clean Air Fund.**

Conclusion:

The report underscores the urgent need to improve air quality and address health disparities. Air pollution's significant public health impact requires comprehensive measures to reduce exposure and mitigate its health effects.

SIGHT Programme

News Excerpt:

The **Ministry of New & Renewable Energy (MNRE)** has enhanced the share of allocation for the Fertilizer Sector under the **SIGHT Programme of the National Green Hydrogen Mission (NGHM).**

Strategic Interventions for Green Hydrogen Transition (SIGHT) Programme

- SIGHT is a sub-scheme under the **National Green Hydrogen Mission.**
- The Scheme is being implemented by **MNRE** through **Solar Energy Corporation of India Limited (SECI)** as the Implementing Agency.
- The SIGHT Programme consists of **two distinct financial incentive mechanisms** to support
 - **The domestic manufacturing of electrolyzers**
 - **The production of Green Hydrogen.**



- The ministry has issued scheme guidelines for implementation of the Strategic Interventions for Green Hydrogen Transition (SIGHT) Programme to cater for the needs of the fertilizer sector.

National Green Hydrogen Mission

- The National Green Hydrogen Mission was launched in January last year with an outlay of Rs. 19,744 crores up to FY 2029-30.
- The aim of the mission was to make the country **Aatmanirbhar (self-reliant) through clean energy** and serve as an **inspiration for the global Clean Energy Transition**.
- The NGHM will lead to **significant decarbonization of the economy, reduced dependence on fossil fuel imports**, and enable India to **assume technology and market leadership in Green Hydrogen**.
- Benefits of this Mission:**
- India's Green Hydrogen** production capacity is likely to reach at least **5 MMT per annum**, with an associated renewable energy capacity addition of about 125 GW.
- The targets by **2030** are likely to bring in over **Rs. 8 lakh crore investments** and create **over 6 lakh jobs**.
- Nearly 50 MMT per annum of CO₂ emissions are expected to be averted by 2030.

Radioactive implant for Rhino horns to curb poaching

News Excerpt:

Recently, South African scientists injected radioactive material into live rhinoceros horns to make them easier to detect at border posts in a project to curb poaching.

More about the news:

- South Africa is home to a large majority of the world's rhinoceroses and is a hotspot for **poaching driven by demand from Asia**, where horns are used in **traditional medicine for their supposed therapeutic effect**.
 - The horn is mostly sold in Eastern countries such as **Japan**, where they are used in traditional medicine to cure headaches, fever, food poisoning and even snake bites.
 - Another country where Rhino horn is popular is **Yemen**, where Rhino horn is highly prized and used as the handle for a traditional dagger called a "jambiya", which is a symbol of manhood. It is presented to a boy when he is 12 years old.
- The radioactive material would render the horn useless, essentially **poisonous for human consumption**.
- Rhinoceros horns are highly sought after on **black markets**, where their price by weight rivals that of gold and cocaine.

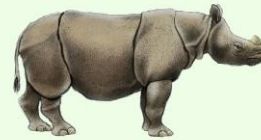
TYPES OF RHINOS FOUND IN THE WORLD



Black Rhino

White Rhino

Sumatran Rhino

Lesser One-Horned Rhino
(Javan Rhino)Greater One-Horned Rhino
(Indian Rhino)

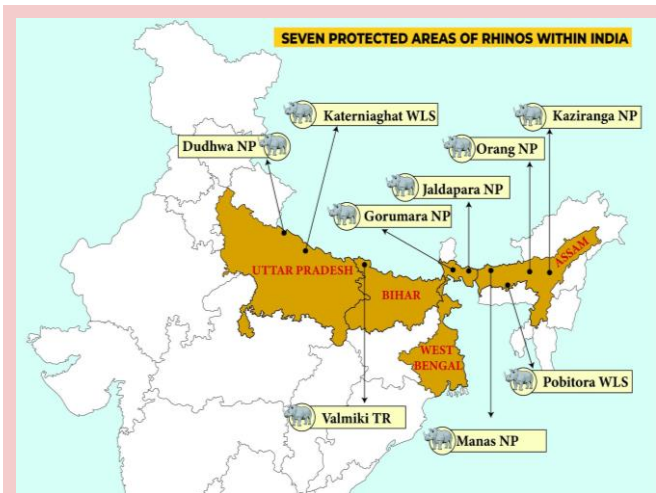
African rhino

- The **African rhino** is divided into two species: the **black rhino** and the **white rhino**.
- White rhinos mainly live in South Africa, but they have also been reintroduced to Botswana, Namibia, Swaziland, and Zimbabwe.
- Southern white rhinos have been introduced to Kenya, Zambia, and Cote d'Ivoire.
- The majority of the black rhino population—98%—is concentrated in four countries: South Africa, Namibia, Zimbabwe, and Kenya.
- South Africa houses 40% of the total black rhino population.** There are some black rhinos in the region that are spread between Cameroon and Kenya.

Indian Rhino

Habitat and distribution:

- The preferred habitat of an Indian rhinoceros is primarily areas that contain grasslands and wetlands located in the foothills of the Himalayas and the Brahmaputra and Ganges valleys.
- At present, the species are restricted to small patches in the Indo-Nepal Terai, northern parts of West Bengal, and Assam. Formerly, they were extensively distributed in the Brahmaputra and Gangetic valleys.
- Within India, rhinos are mainly found in the seven Protected Areas, viz. -
 - Kaziranga NP,
 - Pobitora WLS,
 - Orang NP,
 - Manas NP in Assam,
 - Jaldapara NP and Gorumara NP in West Bengal
 - Dudhwa NP in Uttar Pradesh.
 - In addition, a transient population is also observed in Katarniaghat WLS in Uttar Pradesh and Valmiki TR in Bihar, which experience visits of rhinos from adjoining Nepal.



Characteristics:

- The Indian rhino has a single horn, which is present in both sexes.
- The Indian rhino is the largest of all Asian rhinos. One of the most amphibious rhino species, it is an excellent swimmer.
- It can run at a speed of 55 km/hr for short periods.
- Though it has an incredible sense of hearing and smell, its eyesight is relatively poor.
- The average height is about 170cm, with a circumference of 335cm. While a fully grown male rhino weighs around 1800 to 2800 kg, a female weighs approximately 1,600kg.
- Breeding takes place at all times of the year, and the gestation period is about 16 months.
- The female attains sexual maturity between five and six years, and the male between seven and ten years.
- They are presently classified as 'vulnerable' on the International Union for Conservation of Nature (IUCN) Red List.

High Seas Treaty (Biodiversity Beyond National Jurisdiction)

News Excerpt:

Recently, the Union Cabinet approved India's decision to sign the **Biodiversity Beyond National Jurisdiction (BBNJ) Agreement**, marking a significant milestone in marine conservation efforts.

About BBNJ Agreement:

- The BBNJ Agreement, also known as the '**High Seas Treaty**,' aims to **conserve and sustainably use marine biodiversity in areas beyond national jurisdiction**.
 - These regions, referred to as the '**High Seas**,' are **global commons used for navigation, overflight, and laying submarine cables and pipelines**.
- This agreement under the **United Nations Convention on the Law of the Sea (UNCLOS)** addresses the long-term protection of marine biodiversity through international cooperation and coordination, promoting fair and equitable sharing of benefits derived from high seas resources.

- It also supports achieving several Sustainable Development Goals (SDGs), particularly **SDG14 (Life Below Water)**.

Signatories of the Agreement



As of June 2024, **91 countries** have signed the BBNJ Agreement, and eight Parties have ratified it.



The treaty becomes **legally binding 120 days** after the ratification, acceptance, approval, or accession.

Provisions of the High Seas Treaty:

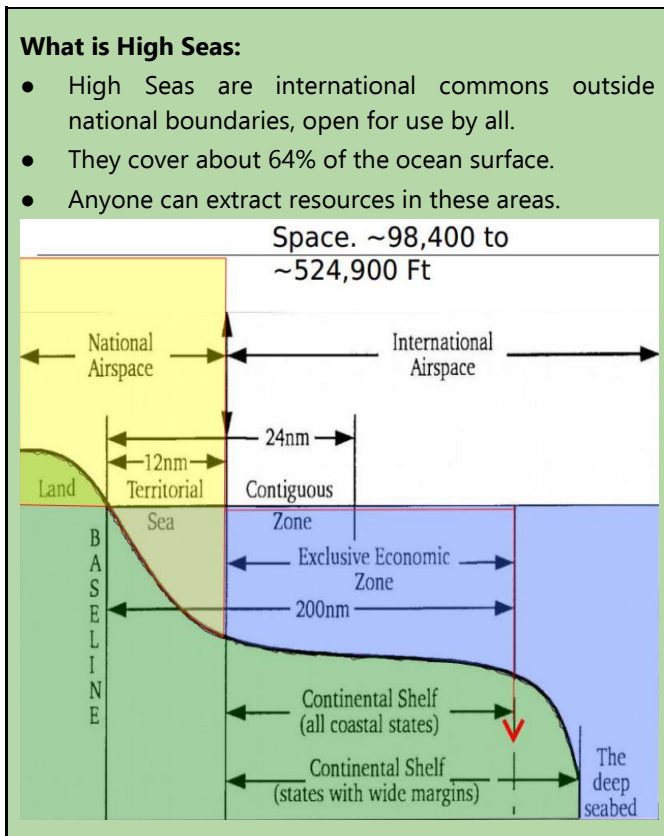
- The treaty would **define and demarcate marine protected areas** in biodiversity-rich zones of the oceans under stress.
- Similar to national parks or protected wildlife areas, certain human activities in these marine protected areas, like deep-sea mining, would be prohibited or regulated.
- The treaty aims to ensure that **benefits from ocean life forms, such as drug development, are considered global commons**, free of intellectual property rights, and equitably shared.
- Commercial activities in open oceans likely to cause large-scale pollution would require an environmental impact assessment.

Benefits for India:

- Signing the BBNJ Agreement allows **India to enhance its strategic presence in areas beyond its Exclusive Economic Zone (EEZ)**, furthering marine conservation efforts and international collaborations.
 - It will also strengthen India's **Deep Ocean Mission (DOM)**.
- This move will **open new avenues for scientific research, access to marine samples, capacity building, and technology transfer**.

United Nations Convention on the Law of the Sea (UNCLOS):

- The BBNJ Agreement is a part of UNCLOS, which was adopted on **December 10, 1982**, and came into force on **November 16, 1994**.
- UNCLOS sets out the legal framework for the seas and the oceans by defining the rights and obligations of States Parties with respect to the maritime environment.
- UNCLOS is crucial for the environmental protection of the seas, addressing maritime boundaries, rights to marine resources, and dispute resolution.
- It established the **International Seabed Authority to regulate mining activities on the ocean floor beyond national jurisdiction**.
- The **BBNJ Agreement** will be the **third implementation agreement** under UNCLOS, following the **1994 Part XI Implementation Agreement** and the **1995 UN Fish Stocks Agreement**.



Impact of High Emissions on Exploitable Fish Biomass

News Excerpt:

A report by the **Food and Agriculture Organization (FAO)** predicts that **exploitable fish biomass** could **decrease by 10 to 30%** or more by the end of the century if emissions are not curtailed.

More About the Report:

- The report, titled "**Climate Change Risks to Marine Ecosystems and Fisheries: Projections to 2100 from the Fisheries and Marine Ecosystem Model Intercomparison Project**," presents findings from the **Fisheries and Marine Ecosystem Model Intercomparison Project (FishMIP)**.
- It was released during the **Thirty-sixth Session** of the **Committee on Fisheries (COFI36)** at FAO headquarters in Rome.

Key Findings of the Report

- A significant **decline in fish stock of more than 10%**, particularly under a **high-emissions scenario**, is projected by the **mid-century** for many regions.
- Notable decline is expected in countries heavily **reliant on aquatic food protein** (such as Solomon Islands, Federated States of Micronesia, Nauru, Portugal, Palau) or **top marine fisheries producers** (such as China, Peru).

Food and Agriculture Organization (FAO)

- FAO is a **United Nations (UN) agency** dedicated to **combating hunger** through agricultural development.
- **Established in 1945**, the FAO operates as a neutral intergovernmental organization.
- **With 195 members**, including **194 countries** and the **European Union**, FAO operates in over 130 countries worldwide.
- FAO has committed to **three primary goals**:
 - Raising nutrition levels and living standards;
 - Improving the production and distribution of food and agricultural products;
 - Enhancing the well-being of rural populations.

Committee on Fisheries (COFI)

- **The Committee on Fisheries is a subsidiary body of the FAO Council.**
- It was established by the FAO Conference in **1965**.
- It serves as the only global intergovernmental forum where **FAO Members convene** to discuss issues related to **fisheries and aquaculture**.
- COFI is unique in providing **periodic global recommendations** and **policy advice** to governments, regional fishery bodies, civil society organizations, private sector actors, and the international community.

Fish biomass

- Fish biomass refers to the **total weight of fish** in a **specific area or population**.
- It is a crucial metric in aquaculture for **assessing fish health**, determining **feeding patterns**, and **optimizing stocking density** and **harvest schedules**.
- Various methods can estimate fish biomass, including **manual sampling**, **eDNA concentration**, and **computer vision technology**.
- These approaches offer **non-intrusive** and **efficient ways** to estimate fish biomass, **monitor growth rates**, and develop feeding formulas.
- Furthermore, fish biomass can be monetized by converting fish waste into valuable products like **fish oils**, **bio-energy**, **proteins**, and **organic fertilizers**.

Climate 'loss and damage' Fund Board

News Excerpt:

The **Philippines** has been chosen to **host the board** of the "**Loss and Damage**" fund, marking another step towards providing financial help for countries to recover and rebuild from the impact of global warming.

About the news:

- The Board for Loss and Damage Fund unanimously decided to call it the "**Fund for Responding to Loss and Damage**" (**FrLD**) during its **second meeting in**

Incheon, South Korea, and also decided that the Philippines would be the host country for operations of the fund.

Loss and Damage Fund:

- COP27 in Egypt in 2022 established a U.N. "loss and damage" fund dedicated to **addressing irreparable climate-driven damage** from drought, floods, and rising sea levels without the details.
- In June 2024, the World Bank's board approved a plan for the **World Bank to act as interim host** of the fund for four years.
- The Loss and Damage Fund Board **comprises 26** members from Parties to the Convention and Paris Agreement, with 12 members from developed country Parties and 14 members from developing country Parties.
- Each Board member has an alternate member. **India is an alternate member to Armenia.**
- It covers both **immediate climate disasters and slow onset events** including cyclones, droughts and heatwaves, sea level rise, desertification, glacial retreat, land degradation, ocean acidification, and salinization according to the World Resources Institute.

Loss and Damage

- "Loss and damage" is a term used in **UN climate negotiations** to refer to the **consequences of climate change that go beyond what people can adapt to**; for example, the loss due to rising sea levels or the loss of homes and lives during extreme floods.

Philippines:

- An archipelago of more than 7,600 islands, the Philippines, which also has a seat on the fund's board, is **frequently hit by typhoons** and other climate change-induced disasters.
- The Philippines must enact suitable **legislation** before it can become the host.
- As host, Manila could **focus attention on the Asia-Pacific region**, where many countries struggle with limited resources, hindering their ability to respond to the effects of climate change.
- Hosting the board, their president said, "this reinforces our dedication to **inclusivity and our leadership role** in ensuring that the voices of those most affected by climate change shape the future of international climate policies".

Biodegradable Biomass-Based Aerogel for Radiative Cooling

News Excerpt:

In a groundbreaking development, scientists have created an innovative aerogel made from gelatin and DNA that not

only surpasses 100% solar reflectance but also offers exceptional radiative cooling.

A Sustainable Cooling Solution:

- Traditional refrigeration systems, while effective, consume significant amounts of energy and **emit considerable greenhouse gasses.**
- In contrast, **passive radiative cooling technologies present a potentially sustainable thermal management strategy by consuming less energy and reducing emissions.**
- However, many current passive cooling materials **rely on polymer materials that lack long-term stability, are not recyclable, or contain harmful compounds.**
- These petrochemical-derived polymers often **struggle with optical** daytime radiative cooling due to their inherent solar absorption.
- Biodegradable Biomass-Based Aerogel is paving the way for high-performance, environmentally friendly advancements in radiative cooling technologies.

Environmental Benefits

- Fabricated exclusively from biomass feedstock, the aerogel is efficiently produced at scale through a process known as **water welding.**
- This method ensures that the material is **not only biodegradable but also boasts impressive reparability and recyclability.** Hence, it can be used without adverse environmental impacts.
- It will help in mitigating environmental pollution caused by **current passive cooling polymer-based materials such as acrylic.**

Aerogel

- Aerogel is an ultralight, highly porous material derived from a gel, in which the liquid component is replaced with gas, resulting in a solid with extremely low density.
- Aerogel is the world's lightest solid material, and it is composed of up to 99.98% air by volume.
- It is known for its exceptional insulating properties due to its low thermal conductivity.

Applications in Insulation and Passive Cooling:

- **Insulation:** Aerogel is used in building insulation, refrigeration, and space suits, providing superior thermal barriers with minimal material thickness.
- **Passive Cooling:** In passive cooling systems, aerogel coatings can reflect sunlight and reduce heat absorption, maintaining cooler interior temperatures without active cooling devices. This application is beneficial for energy-efficient buildings and sustainable cooling solutions.

Balancing Bio Energy and Biodiversity

News Excerpt:

New research has highlighted the importance of strategic land-use planning for achieving goals in bioenergy, climate change mitigation, and biodiversity restoration.

Key Highlights of the study:

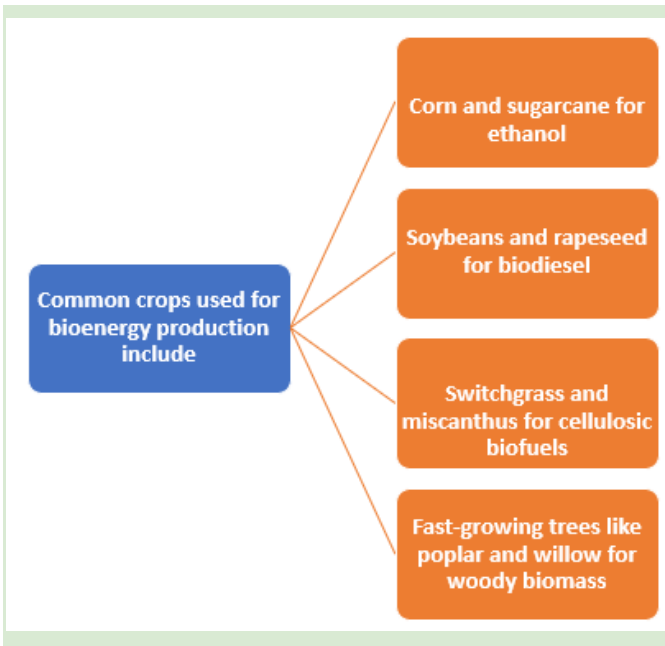
- The study was published in the **Journal of Applied Ecology**.
- The study found that energy crop plantations can, in some cases, be more beneficial for biodiversity than current agricultural practices.
 - This is especially true for plantations with diverse plant mixes and in areas dominated by existing agriculture.
 - This suggests that increasing landscape complexity can have ecological advantages.
- Using the **Biodiversity Intactness Index (BII)**, the study compares the impacts of energy crop plantations versus natural vegetation restoration on biodiversity.
- It identifies regions like Central Europe, the eastern coasts of the USA and China, and parts of West Africa where converting agricultural land to energy crops could have minimal detrimental effects on biodiversity.

Biodiversity Intactness Index:

- The BII measures biodiversity change using abundant data on plants, fungi, and animals worldwide.
- The Index shows how local terrestrial biodiversity responds to human pressures such as land use change and intensification.
- Biodiversity indicators such as the BII are essential tools for understanding, monitoring and communicating biodiversity changes and tracking our progress towards goals.
- The Index uses the most comprehensive evidence base of its kind alongside robust, peer-reviewed methodology.

BIO ENERGY

- Bioenergy is renewable energy derived from biological sources, primarily plant biomass.
- These crops are converted into various forms of bioenergy, including liquid biofuels, biogas, and solid biomass for heat and electricity generation.
- While bioenergy offers potential benefits as a renewable alternative to fossil fuels, it also raises concerns about land use, food security, and environmental impacts.
- Ongoing research focuses on developing more efficient conversion processes and utilizing non-food crops and waste materials to address these challenges.



National Bioenergy Programme

- India has launched an ambitious National Bioenergy Programme, **aiming to achieve 50% of its installed electricity capacity from non-fossil fuel sources by 2030 and net-zero emissions by 2070.**
- This initiative is overseen by the Ministry of New and Renewable Energy (MNRE).
- It focuses on harnessing the biomass and waste resources for clean energy production.
- **It has three sub-schemes:**
 - Waste to Energy Programme (Programme on Energy from Urban, Industrial and Agricultural Wastes /Residues)
 - Biogas Programme
 - Biomass Programme (Scheme to Support Manufacturing of Pellets and Promotion of Biomass based cogeneration in Industries)

Uttar Pradesh Leads in Compressed Biogas Potential

- News Excerpt:**
- Uttar Pradesh** stands out in India's **renewable energy sector**, boasting the potential to generate **24% of the country's compressed biogas (CBG)**.
- More details about the news:**
- **Western UP**, especially Muzaffarnagar, Meerut, Saharanpur, Bijnor, Bulandshahar, and Aligarh, has **abundant feedstock** availability and hosts most of the state's **operational and upcoming CBG plants**.

CBG in a commercial scale is expected to have the following benefits

Import reduction of natural gas and crude.	Utilization of agricultural residue, cattle dung and MSW for the production of CBG and thus to achieve reduction in emissions and pollution	A boost towards fulfillment of National commitments in achieving climate change goals	Providing a buffer against energy security concerns and crude/gas price fluctuations	Lowering pollution and carbon emission
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- Experts believe that **UP could establish 1,000 CBG projects** from the **5,000 plants planned nationwide** under the **Sustainable Alternative Towards Affordable Transportation scheme**, using just 20% of its surplus feedstock.

About Compressed Biogas (CBG)

- Bio-degradable organic waste or biomass**, such as agricultural residue, cattle dung, sugarcane press mud, municipal solid waste, and sewage treatment plant waste, can produce biogas through anaerobic decomposition.
- The biogas is then purified to remove **hydrogen sulfide (H₂S)**, **carbon dioxide (CO₂)**, and **water vapour** and subsequently compressed into Compressed Biogas (CBG), which contains over **90% methane (CH₄)**, a combustible and clean fuel.
- CBG is a **clean, renewable fuel** with **calorific value** and properties similar to CNG, making it suitable for use in **automotive, industrial, and commercial sectors**.

Significance of Compressed biogas (CBG):

- Compressed biogas (CBG)** can improve
 - Waste management.**
 - Promote local **clean energy solutions.**
 - Reduce our dependence on imported **compressed natural gas (CNG).**

Challenges:

- Key issues include **limited offtake of bioslurry**, a by-product of CBG production.
- Bioslurry**, also known as **fermented organic manure**, is often seen as a disposal problem rather than a revenue source.
- The **inconsistent purchasing of gas** by oil and gas marketing companies leaves many plants operating below capacity.
- The **absence of nearby CNG pipelines** exacerbates this issue. For **smaller plants (below 5 tonnes per day)**, transporting gas through cascades is viable, but **larger plants require direct pipeline** access for optimal operation.

- Operational inefficiencies**, such as **gas leakage** and **suboptimal performance**, are also caused by a **shortage of trained personnel** in biogas systems and operations.
- Banks are hesitant to finance CBG projects** due to **perceived risks** and **low margins**, requiring high collateral and offering interest rates starting at 11.5%.

Government Initiatives:

- The **Ministry of Petroleum and Natural Gas** has launched "**Sustainable Alternative Towards Affordable Transportation (SATAT)**" initiative on 1st October 2018, with the aim of establishing an ecosystem for production of **Compressed Bio Gas (CBG)** from various waste / biomass sources and for promoting its use along with **Natural Gas**.
- Under the **GOBARDHAN scheme** implemented by the Department of Drinking Water and Sanitation, **Ministry of Jal Shakti**, financial assistance of up to **Rs. 50.00 lakh per district** is available for setting up **model community biogas plants**.
- The **Ministry of Power** has notified the **SAMARTH Mission** (National Mission on Use of Biomass in Thermal Power Plants) for promoting the **blending of biomass** in the existing **coal powered thermal power plants**.
- The **Central Pollution Control Board**, Ministry of Environment, Forest and Climate Change has notified guidelines to provide **financial support** for setting up of **Biomass Pellet plants** in the NCT of Delhi, States of Punjab and Haryana and NCR districts of Rajasthan and Uttar Pradesh.

How well is India tapping its rooftop solar potential?

News Excerpt:

In **2023-2024**, India's installed **Rooftop solar (RTS)** capacity grew by **2.99 GW**, marking the **highest annual increase** on record.

Potential of Rooftop Solar in India:

- According to a recent report by the **Council on Energy, Environment and Water (CEEW)**, over **250 million households** across the country have the potential to deploy **637 GW of solar capacity on rooftops**.
- RTS has a personal connect with people as it directly brightens up every individual household, and it has the potential to improve household finances
- It provides affordable power, reduces dependency on power distribution companies, and provides electricity even in tough terrains where the state-owned companies refuse to serve.

- It is a **sustainable, decentralized, and cost-effective solution** to meet the country's **increasing electricity demands** and **empower consumers** to become self-reliant.
- As of March 31, 2024, the **total installed RTS capacity** in India stood at **11.87 GW**.

Rooftop Solar Target in India:

- In **2015**, the government **fixed a 40 GW RTS target by 2022**, with specific yearly targets for each State and Union Territory.
- By **December 2022**, India had achieved an **installed RTS capacity of about 7.5 GW**, and the **deadline for the 40 GW target was extended to 2026**.
- Progress in **RTS installations** has been driven by:
 - **Sustainable Partnership for RTS Acceleration in Bharat (SUPRABHA)**
 - **Sustainable Rooftop Implementation for Solar Transfiguration of India (SRISTI)**
- However, India still has a long way to go, and several states have yet to tap into this potential fully.
- To meet the target of installing **500 GW of renewable energy capacity by 2030**, with a **solar component of 280 GW**, **RTS must contribute about 100 GW**.

Jawaharlal Nehru National Solar Mission

- The Mission, launched in **January 2010**, was the first major initiative to promote **solar energy** growth, aiming to produce **20 GW of solar energy** (including RTS) across **three phases**: 2010-2013, 2013-2017, and 2017-2022.

Pradhan Mantri Surya Ghar: Muft Bijli Yojana

- This scheme aims to **install RTS systems in 1 crore households**, providing up to **300 units of free electricity per month**.
- With an **average system size of 2 kW**, this initiative is expected to add **20 GW to the RTS capacity**.

SCIENCE & TECH.
GENERAL SCIENCE

Casimir Effect

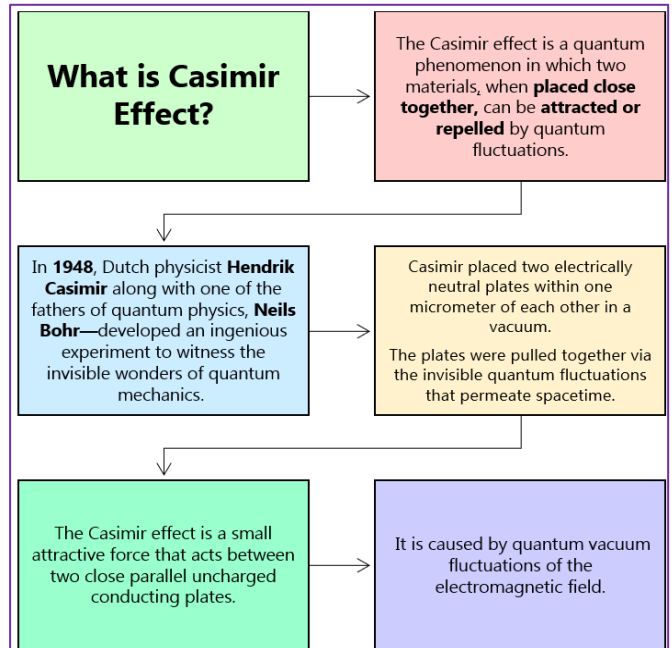
News Excerpt:

Recently, Scientists Discovered How to Control the Casimir Effect—and Supercharge Tiny Machines.

About the study:

- ◁ A new study from researchers at the **Chinese Academy of Sciences** reports that they've successfully manipulated the Casimir effect by reversing the transition from attractive to repulsive.
- ◁ They used a **ferrofluid**—a fluid that can be manipulated using magnetic fields—as an intermediate medium.

- ◁ The researchers used magnetic fields to create a reversible transition from Casimir attraction to repulsion.
- ◁ The ability to control the Casimir effect in this way could be a big breakthrough for engineering nanotechnology, which is often designed with the Casimir effect in mind.



Post-Casimir development:

- ◁ After 50 years, Yale physicist **Steve Lamoreaux** measured this incredibly small effect.
 - However, with the rise of nanotechnology during that same period, understanding the Casimir effect and its impact on these incredibly small machines became vitally important.

Regenerative Braking in Electric Vehicle

News Excerpt:

Electric vehicles are central to efforts towards sustainability aided by state-led incentives and subsidies and Regenerative braking is an important mechanism in these vehicles that increases their energy use efficiency.

What is Electric Regenerative Braking?

- ◁ Regenerative braking is a mechanism in electric vehicles (EVs) that **converts the kinetic energy of the wheels into a storable form for future use**.
- ◁ When a vehicle brakes, it slows down by removing kinetic energy. **Regenerative braking converts this mechanical energy into electrical energy, which can be stored.**

Role in Energy Conservation

- ◁ In an EV, the battery powers an electric motor (traction motor) to convert electrical energy into mechanical motion.

- ◁ During braking, the motor acts as a generator, converting mechanical energy back into electrical energy, which is then stored in the battery.
 - This process helps recover some of the energy that would otherwise be lost as heat in conventional braking systems.

Feasibility and Limitations

- ◁ While regenerative braking improves energy efficiency, it has some limitations.
 - It often cannot bring a vehicle to a complete stop, requiring a conventional braking system to dissipate the remaining kinetic energy as heat.
 - Additionally, the energy recovered decreases as the vehicle's speed drops.
- ◁ Despite these challenges, regenerative braking is particularly beneficial in **stop-and-start traffic conditions**, significantly improving the overall energy efficiency of EVs.

The Delhi Metro has contributed tremendously to the environment by becoming the world's first railway project to claim carbon credits for regenerative braking.

By employing the regenerative braking technology, the DMRC's trains can 'generate' electricity when brakes are applied.

On average 35% of electricity is regenerated and on a per kilometer basis, 5.26 kWh/Km of energy is regenerated.

The electricity generated in braking is fed back into system and is utilized by other trains in the loop at different locations on track and not in braking mode.

The electricity regenerated by trains in braking mode is used by trains in other modes of operation.

This translates into reduction of load on the grid equivalent to the amount of electricity regenerated.

In the absence of a regenerative braking system, this requirement for electricity would have been met by drawing power from the national grid.

Since the power plants use coal which releases enormous amounts of CO₂, Delhi Metro to that extent, avoided such emissions.

REGENERATIVE BRAKING IN DELHI METRO

Additional Energy Recovery Methods

- ◁ Regenerative braking can also convert mechanical energy into other forms, such as increasing the angular momentum of flywheels or compressing air in a pump.
- ◁ Flywheels, **for instance**, can store energy quickly and efficiently, making them useful in various applications, including augmenting engine output in racing or assisting navigation in submarines and satellites.

SYNCHN 2024

News Excerpt:

The Translational Health Science and Technology Institute (THSTI), under the Biotechnology Research and Innovation Council (BRIC) and the Department of Biotechnology, Government of India, hosted SYNCHN 2024 on its campus.

More about the event

- ◁ **SYNCHN stands for** Synergy in science built through elements of collaboration for high quality data & expertise in NCR Biotech Cluster.
- ◁ **Key Focus:** SYNCHN 2024 emphasized fostering strong collaborations between the academic and industrial sectors.
 - The event facilitated one-on-one interactions between industry representatives and THSTI's principal investigators through focused parallel breakout sessions.
- ◁ **Participants:** The event brought together stakeholders from the **biotechnology industry, including startups, established companies, and policymakers**. These interactions were geared towards propelling biomanufacturing advancements and aligning with the Atmanirbhar Bharat vision of self-reliance.
- ◁ **Government Support:** A key address highlighted the government's strong support for academia-industry collaborations, considering them essential for India's progress. The urgency of such partnerships was emphasized, with a call for 100-day missions to drive bio-innovation and establish India as a global supply chain leader.

BRIC

- ◁ The Department of Biotechnology (DBT), Ministry of Science and Technology, with the approval of the cabinet, **has subsumed its 13 Autonomous Institutions (AIs) and created one Autonomous Body, the Biotechnology Research and Innovation Council (BRIC), as a registered Society**.
- ◁ BRIC is intended **to integrate the multi- disciplinary research, training, and innovation programs operational across various DBT institutions** for maximum impact and establish structures that leverage existing strengths to build systemic collaborations, identify convergent directions, and set a clear path for translation and asset monetization.

BRIC-THSTI

- ◁ The institute acts as a catalyst to translate fundamental discoveries by building rigorous clinical research capacity and enabling faster discoveries from bench to bedside.
- ◁ **THSTI** is housed within the NCR Biotech Science Cluster in Faridabad.
- ◁ The institute has four core facilities viz. **Small Animal Facility, Data Management Center, Biorepository, and Bioassay Laboratory that serves not only the research programs of THSTI but also the NCR Biotech Science Cluster and other academic and industrial partners**.

- ◁ **Importance of Collaboration:** The critical importance of collaboration between academic and industrial sectors in medical biotechnology was underscored. THSTI was commended for its efforts in uniting stakeholders from diverse areas with a shared focus on bio-innovation and biomanufacturing.
- ◁ **THSTI's Commitment:** The vision behind SYNCHN 2024 and the significance of industry partnerships in advancing translational research were shared.
 - THSTI's commitment to **leveraging its research expertise and cutting-edge facilities to empower industry partners and further translational research efforts was emphasized.**

SPACE

Indian Scientists Uncover Plasma Composition's Role in Astrophysical Jets

News Excerpt:

Scientists from the **Aryabhata Research Institute of Observational Sciences (ARIES)** have discovered the impact of plasma composition on the dynamics of astrophysical jets from celestial bodies such as black holes, neutron stars, and pulsars.

Findings:

- ◁ Researchers upgraded a numerical simulation code to study jets composed of electrons, positrons, and protons, revealing new insights into their behaviour and propagation speeds.
- ◁ The researchers showed that the change in plasma composition leads to the difference in propagation velocities of the jets even if the initial parameters for the jets remain the same.
- ◁ Contrary to expectations, jets composed of electrons and positrons were slower than those containing protons.
- ◁ The electron-positron jets show more pronounced turbulent structures. The growth of these structures also results in the deceleration of the jets.
 - The formation and growth of turbulent structures are known to affect the stability of the jets. Hence, plasma composition may also influence the long-term stability of the jets.

Significance of the finding:

This finding is crucial for understanding the physical processes near black holes and neutron stars, potentially solving the longstanding mystery of jet composition.

What are Astrophysical jets?

- ◁ Astrophysical jets are outflows of ionized matter that are emitted as extended beams from celestial objects such as black holes, neutron stars, and pulsars.
- ◁ Despite years of research, it is not known what kind of matter astrophysical jets are composed of.

- Whether they are made of bare electrons or protons or whether positively charged electrons called positrons are also present.
- ◁ Knowing the jet composition is vital as it will allow us to pinpoint on the exact physical process at work near black holes and neutron stars.
 - In theoretical studies the relation between thermodynamic quantities of the jet like mass density, energy density and pressure do not have the information of composition.

Indian Astronauts Prepare for International Space Station Mission

News Excerpt:

The Indian Space Research Organisation (ISRO) has selected two astronauts from its Gaganyaan program for a groundbreaking mission to the International Space Station (ISS).

More about the mission:

- ◁ Selected astronauts will undergo specialized training in the U.S.
 - Only one of the two will be finally selected for the mission to ISS.
- ◁ The objective of the training is **to focus on ISS modules and protocols, complementing their Gaganyaan-centric training.**
- ◁ The mission includes a 14-day docking with the ISS.
- ◁ SpaceX contracted for transportation and familiarization with systems.
- ◁ The mission will be part of NASA's Axiom-4 mission, the fourth private astronaut mission of Axiom Space.

Gaganyaan Mission

- ◁ It envisages demonstration of **human spaceflight capability by launching a crew of 3 members to an orbit of 400 km for a 3 days mission and bring them back safely to Earth, by landing in Indian sea waters.**
- ◁ The prerequisites include development of many critical technologies including **human rated launch vehicle for carrying crew safely to space, Life Support System to provide an earth like environment to crew in space, crew emergency escape provision and evolving crew management aspects for training, recovery and rehabilitation of crew.**

International Space Station

- ◁ The International Space Station (ISS) is a large, modular spacecraft orbiting Earth. It serves three primary functions:
 - **Habitation:** A home for astronauts and cosmonauts
 - **Research:** A unique microgravity laboratory
 - **Collaboration:** An international partnership in space

Key Features:

- < Operated by five space agencies: NASA, Roscosmos, JAXA, ESA, and CSA
- < The first module of the ISS Zarya control module was launched in 1998, and the station was fully assembled in 2011.
 - o The International Space Station has been continuously occupied by astronauts ever since and is expected to remain in orbit until 2030.
- < ISS is the largest man-made object in space launched on November 20, 1998.
- < It orbits earth at a speed of 28000 km/hr in an orbit at 400 km from Earth surface completing one revolution around earth in 90 minutes.

India's Space Program:

- < Gaganyaan, India's human spaceflight program.
- < The first manned Gaganyaan mission is expected after 2025, **following two unmanned flights.**

China's Chang'e-6 Lunar Probe**News Excerpt:**

China has made a groundbreaking achievement by becoming the first country to gather samples from the far side of the moon and return them to Earth.

Mission Details and Achievements:

- < **A re-entry capsule containing the lunar samples** parachuted into a landing zone in the rural Siziwang Banner region of Inner Mongolia after being released into Earth's orbit by the uncrewed Chang'e-6 probe.
 
- o The intention was **to collect up to 2kg of moon rock and soil.**
- < **The Chang'e-6 mission, named after the Chinese moon goddess, launched from Hainan province and landed on the moon's far side.**
- < The mission's lander spent two days collecting rock and soil samples from **the South Pole-Aitken (SPA) basin**, one of the oldest and largest craters on the moon, using a robotic arm and drill.
- < The ascent module then lifted off from the moon's surface, realigned with the orbiter, and began its journey back to Earth.
- < **Recovering any samples from the moon is difficult, but doing so from the far side, where communications are particularly challenging, is a step no other agency has taken.**

Similar Missions:

- < **Previously, the US, China, and the former Soviet Union had gathered samples from the near side of the moon, but this is the first time material has been brought back from the far side.**

Far side of the moon

The moon is tidally locked with Earth, always showing the same face as our planet. The other side which is opposite to this is called the far side of the moon.

The far side of the moon has fewer ancient lava plains, a thicker crust, and more craters from violent impacts compared to the near side.

Recovering samples from the far side is tremendously exciting scientifically, as we only have very limited information on the geology of the far side.

It has been processed very differently from the side of the moon facing us, which has been **extensively resurfaced by volcanic activity in the past, creating the maria from which most samples have been obtained.**

Chandrayaan-3's lander touched down on the lunar surface in August of 2023 making India the first country to successfully land a spacecraft near the moon's south pole on the far side of the moon.

- < **China has collaborated with international scientists to study samples from the near side of the moon.**
- < **However, it is unclear whether the same access will be granted to the new samples from the far side.**
- < **These latest samples could provide new insights into the early history of the moon and Earth.**

Future Lunar Missions:

- < China has several more lunar missions planned for this decade, aimed at paving the way for an **International Lunar Research base.**
 - o This base will be **co-led with Roscosmos, the Russian space agency, and will eventually see a Chinese astronaut landing on the moon.**
- < India's **Chandrayaan-4**, also known as the **LUPEX mission**, is scheduled to launch in 2028.
 - o **The Indian space agency ISRO has plans to send Indian astronauts to the Moon by 2040.**

Spiral Galaxies appeared 4 Billion Years Sooner Than Expected**News Excerpt:**

A new study has revealed a higher number of spiral galaxies in the universe's early stages than previously expected.

Study of Galaxies:

- < The universe, approximately 13.8 billion years old, contains various galaxy types, including **spiral and elliptical shapes.**

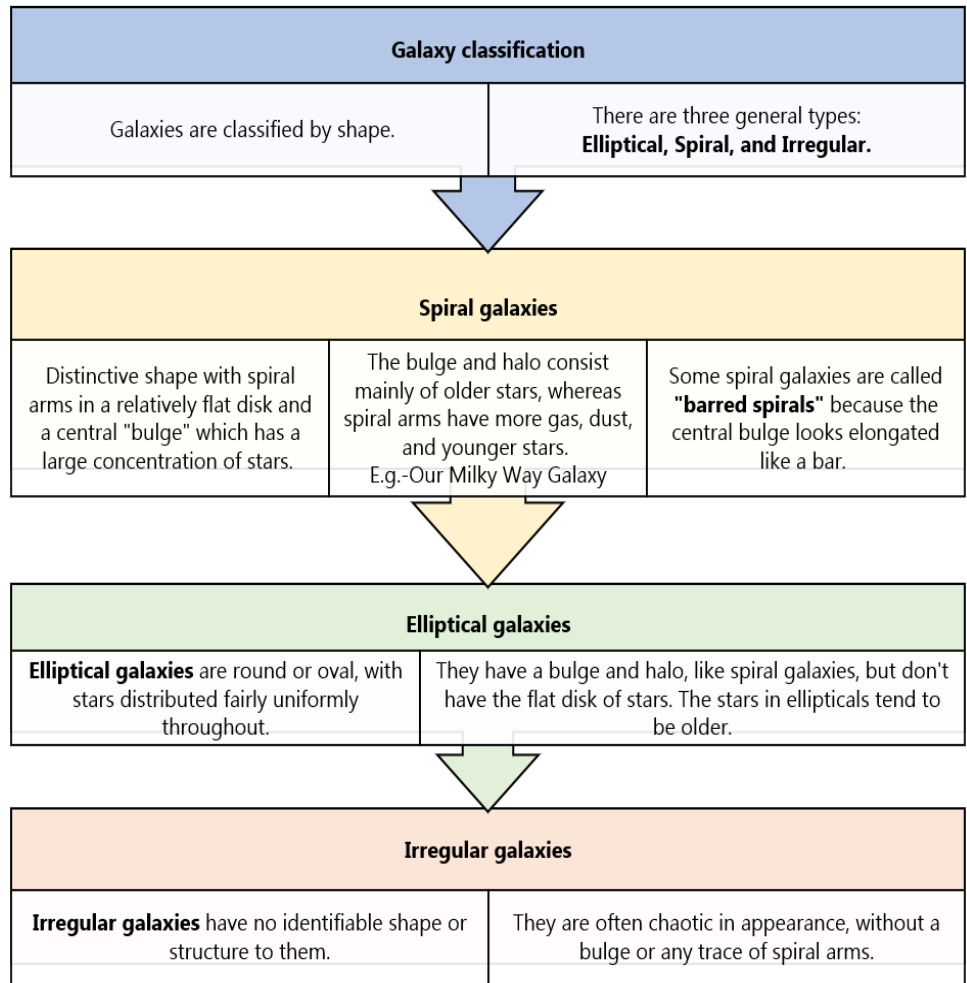
- ◁ Traditionally, astronomers believed spiral galaxies formed around **6 billion years** ago. However, recent findings suggest their formation occurred much earlier.
- ◁ Astronomers study galaxies to understand their formation and evolution, but examining older galaxies is challenging due to their faint light.
- ◁ The prevailing theory suggests that early galaxies had irregular shapes and lacked disks, which formed later as the universe cooled.
 - This process was thought to take billions of years. The new study, however, indicates that this cooling and spiral formation occurred simultaneously.

Findings of the study:

- ◁ Utilizing the James Webb Space Telescope, researchers from the University of Missouri studied 873 galaxies and identified 216 spiral galaxies, some dating to just 1.5 billion years after the universe's birth.
 - This significantly revises the timeline for the formation of spiral galaxies.
- ◁ The study involved manually classifying each galaxy image as spiral or non-spiral, a method ensuring minimal human bias.
- ◁ The findings showed that between 3 billion and 7 billion years after the Big Bang, the fraction of spiral galaxies increased from 8% to 48%, a much higher rate than previously observed.

Challenging the current model of Galaxy study:

- ◁ These new observations challenge existing models of galaxy formation, which use simulations incorporating dark matter, gravity, and hot, dense gasses.
- ◁ As the universe ages, gasses cool and clump together, forming stars and galaxies.
 - However, the presence of fully formed spiral galaxies so early suggests that current theoretical models need refinement.
- ◁ The study's results also have implications for understanding the rate of star formation.
 - For Earth-like planets to form around stars, spiral galaxies must contain enough heavy elements, which are distributed through Supernova.



- However, factors like black holes can influence star formation rates.
- ◁ As spiral galaxies became more common, star formation peaked, and these galaxies eventually had less gas in their arms, slowing further star formation.
- ◁ Collisions between galaxies, such as the predicted Milky Way-Andromeda collision, could potentially restart this process, creating elliptical galaxies.

Nova Explosion

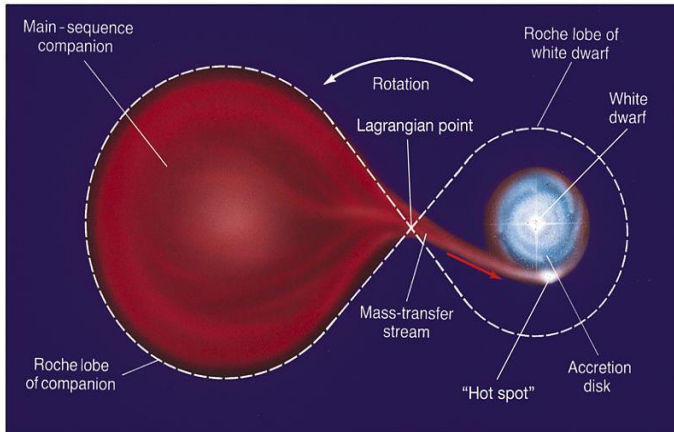
News Excerpt:

In September 2024, a once-in-a-lifetime nova explosion 3,000 light-years away from Earth is expected to light up our night sky.

What is a Nova Explosion?

- ◁ A Nova explosion occurs when a star, **as it interacts with a nearby star, undergoes a massive thermonuclear explosion.**
- ◁ This event happens repeatedly over time in some star systems.
- ◁ This phenomenon involves a **dramatic explosion as one star interacts with another nearby star, a recurring event during the long, slow death of stars in a binary system.**

The Blaze Star



- < The star system known as **T Coronae Borealis, or "Blaze Star" (T CrB)**, consists of two stars: a white dwarf and a red giant.
- < **The white dwarf**, a dense remnant of a once larger star, is about the size of Earth but with the mass of the Sun.
- < Its neighbour, the **red giant**, is in its final stages of life and is being stripped of **hydrogen by the gravitational pull of the white dwarf**.
- < This process leads to a tremendous buildup of pressure and heat, triggering the nova explosion.

Recurrent Novas

- < **T CrB experiences nova events roughly every 80 years, making it a "recurrent" nova.**
- < Historical records suggest prior eruptions were observed as far back as December 1787 and October 1217 AD.

Nova vs. Supernova

- < A nova is not the same as a supernova.
- < While a supernova is the final, destructive explosion of a star, **a nova event does not destroy the white dwarf, allowing the process to repeat over time.**

What Will the Nova Look Like?

- < **To the naked eye, the nova will appear as a new star in the sky.**
- < High-powered telescopes will reveal more detail, showcasing the brightly coloured luminosity of the nova.
- < The explosion will increase T CrB's brightness dramatically, **making it visible to the naked eye for several days.**

How to Find T CrB?

- < The T CrB system is located in the **Northern Crown (Corona Borealis), a horseshoe-shaped curve of stars west of the Hercules constellation.**
- < To locate the Northern Crown, find the **two brightest stars in the Northern Hemisphere: Arcturus and Vega.**
 - o Tracing a line between these stars will lead you to the Northern Crown, where T CrB lies.

Scientists Confirm Moon Cave Potential for Future Astronaut Shelter

News Excerpt:

An Italian-led research team has provided evidence for a large cave accessible from the deepest known pit on the moon, situated in the Sea of Tranquillity.

Discovery Details:

- < Located approximately 250 miles (400 kilometres) from the Apollo 11 landing site, it is not far from where Neil Armstrong and Buzz Aldrin first landed 55 years ago.
- < This cave is one of potentially hundreds that could provide natural protection for lunar explorers.
- < This pit, like over 200 others identified on the moon, was formed by the collapse of a lava tube.

Research Methods:

- < The team utilized radar measurements from **NASA's Lunar Reconnaissance Orbiter and compared these with known lava tubes on Earth.**
- < Their findings, published in the **journal Nature Astronomy**, reveal that the **radar data shows only the initial part of the underground cavity.**
 - o The cave is estimated to be at least 130 feet (40 meters) wide and tens of yards (meters) long, likely even more extensive.

Significance of Lunar Caves:

- < Lunar caves have been a mystery for over 50 years. The discovery of this cave provides a significant breakthrough in understanding the moon's geological features.
- < Most pits appear to be located in the moon's ancient lava plains, **with some potentially at the moon's south pole, where NASA plans future astronaut landings.**
 - o These permanently shadowed craters are **believed to contain frozen water, which could be used for drinking water and rocket fuel.**

Historical Context

- During NASA's Apollo program, 12 astronauts landed on the moon, beginning with Armstrong and Aldrin on July 20, 1969.
- This new finding builds on the legacy of lunar exploration, offering a promising future for sustainable human presence on the moon.
- The confirmation of a cave on the moon marks a significant step towards enabling long-term human exploration and habitation, providing both shelter and scientific opportunities that could transform our understanding of the lunar environment.

Implications for Future Exploration:

- < The findings suggest the **existence of hundreds of pits and thousands of lava tubes on the moon.**
- < These **natural shelters could protect astronauts from cosmic rays, solar radiation, and micrometeorite**

strikes, offering a safer and potentially more practical alternative to building habitats from scratch.

- Reinforcing the cave walls to prevent collapse would still be necessary, but the advantages are considerable.

Scientific Opportunities:

- Materials inside these caves, **unaltered by the moon's harsh surface conditions, can provide valuable insights into the moon's evolution, particularly its volcanic activity.**

NASA's CHAPEA project

News Excerpt:

The four volunteer crew members of NASA's Mars simulation mission emerged after a year of living in a habitat replicating the Red Planet.

- It was the first of three planned simulations to understand the challenges Mars poses for space explorers.

What is the CHAPEA project?

- The CHAPEA project, or **Crew Health and Performance Exploration Analog**, is a **NASA initiative** designed to simulate conditions for long-duration Mars missions.



- The CHAPEA project provides crucial insights that will help NASA design safer and more effective Mars missions in the future.

More details about the CHAPEA project:

- Purpose:** The project aims to understand and prepare for the challenges astronauts will face during extended stays on Mars.
- Structure:** The project consists of a series of year-long simulations, with the first one completed in July 2024.
- Location:** The simulations are taking place at the **Johnson Space Center in Houston, USA.**
- Habitat:** Participants live in "**Mars Dune Alpha**," a 3D-printed, 1,700-square-foot facility that mimics the habitat of Mars.
- Activities:** Crew members engage in simulated Mars activities, including "**Mars walks**," **growing food**, and **dealing with communication delays.**
 - Marswalks is conducting spacewalks in suits in the Martian atmosphere.
- Goals:** CHAPEA collects data on the physical and psychological impacts of long-term isolation, resource management, and other Mars-specific challenges.
 - The data will also help NASA prepare for long-term presence on the Moon as part of its Artemis programme, seen as another step towards an expedition to Mars.

- Future plans:** NASA has scheduled two more CHAPEA missions for 2025 and 2026.
- This project is part of NASA's larger effort to prepare for human exploration of Mars, potentially in the 2030s.

Polaris Dawn Mission

News Excerpt:

SpaceX is targeting July 31 for the launch of the historic Polaris Dawn astronaut mission.

More details about the news:

- Polaris Dawn is a planned **private human spaceflight mission.**
- It's operated by SpaceX on behalf of Jared Isaacman, the billionaire funding the Polaris Program.
- If successful, this mission will undertake the first-ever spacewalk on a commercial spaceflight and will achieve the highest Earth orbit by a crewed spacecraft.
- Polaris Dawn will launch on a **Falcon 9 rocket**, with the four commercial astronauts calling a **Crew Dragon capsule** home for five days while in space.
- The mission aims to raise money for St. Jude Children's Hospital, similar to a previous mission dubbed Inspiration4, which raised more than \$240 million for the charity.
- Polaris Dawn also has four main mission parameters:**
 - This mission hopes to achieve the highest-ever Earth orbit. At 1400km, it will beat the previous record by just 32km, set in 1966 by the crew of Gemini 11.
 - After this, the Crew Dragon will lower its apogee to 750km for the remainder of the mission.
 - This flight plan will take the crew through portions of the Van Allen belts, allowing the crew to conduct research on the effects of spaceflight and space radiation on human health.
 - Polaris Dawn will host the first-ever commercial spacewalk at around 700km above the Earth's surface.
 - This will be the first test of in-space communications using SpaceX's Starlink satellite constellation, which will prove invaluable as humanity continues to spread out into the solar system.
 - The crew will conduct scientific research to develop an understanding of human health for future long-term space flights, including ultrasounds to test decompression sickness, gathering data on the radiation environment, and research into **Spaceflight Associated Neuro-Ocular Syndrome (SANS)** – the neurological effects of the eye and linked diseases caused by being in space.



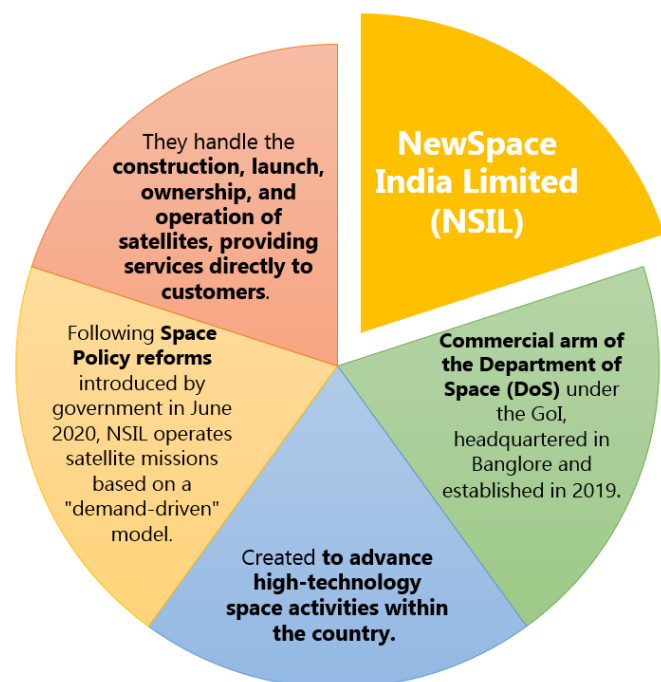
Space MAITRI Mission

News Excerpt:

Australian-Indian in-space servicing arm **Space Machines Company** has signed a launch service agreement with ISRO's commercial arm, **NewSpace India Ltd (NSIL)**, for the launch of the **second Optimus spacecraft**.

Launch Details:

- < The mission, named **Space MAITRI (Mission for Australia-India's Technology, Research and Innovation)**, is scheduled for launch in 2026.
- < The mission will use NSIL's new mini rocket, the **Small Satellite Launch Vehicle**.
- < Weighing 450kg, the **second Optimace spacecraft is the largest Australian-designed and built spacecraft to date**.



Significance of the mission:

- < Space MAITRI **aims to tackle the escalating issue of space debris orbiting Earth**.
- < The mission is supported by an **\$8.5 million grant** from the Australian Space Agency and is part of the **ISI India Projects program**.
- < The mission exemplifies the partnership between Australia and India, highlighting Australia's innovative space technologies.
- < This collaboration is expected to inspire future explorers and promote international cooperation in sustainable space activities.

Small Satellite Launch Vehicle

- < The **SSLV is a three-stage launch vehicle featuring three solid propulsion stages and a liquid propulsion-based Velocity Trimming Module (VTM) as the terminal stage**.

- < **The first developmental flight of SSLV — the SSLV-D1, launched on 7 August 2022 but failed to place the satellites (EOS-02 and AzaadiSAT) into the desired orbit due to an anomaly.**
- < It is capable of launching a 500 kg satellite into a 500 km planar orbit from Satish Dhawan Space Centre.
- < **Key features of the SSLV:**
 - o low cost,
 - o short turnaround time,
 - o flexibility to accommodate multiple satellites,
 - o launch-on-demand capability, and
 - o minimal launch infrastructure requirements.

HEALTH

Skin Bank

News Excerpt:

The **Indian Army** has established a **new skin bank** facility to treat severe burn injuries and other skin conditions for service personnel and their families.

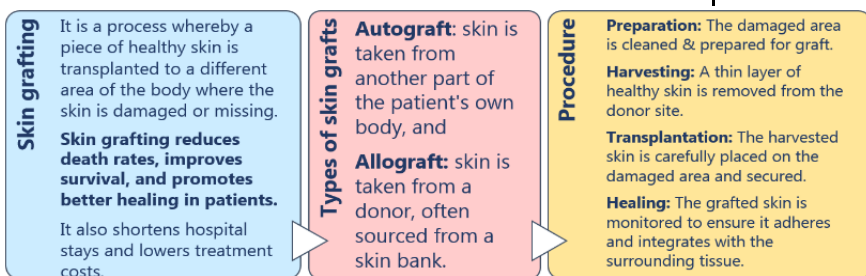
What is a skin bank:

- < A skin bank is a **facility where the skin of deceased persons is donated**.
- < After being collected from a donor, the skin is tested for infections, processed, and frozen until it's needed.
- < When a burn victim requires skin for their injuries, a surgical procedure called **skin grafting** is conducted.

Army Hospital Skin Bank:

- < The state-of-the-art skin bank facility is opened at the **Army Hospital (Research & Referral), New Delhi**.
- < The facility offers the latest modern treatment for severe burn injuries received by armed forces personnel and their families.
- < The facility is staffed with trained medical professionals, including plastic surgeons, tissue engineers and specialized technicians.
- < The skin bank will serve as a **centralized hub for the collection, processing, storage and distribution of skin grafts**, providing a "**critical resource**" for military medical centres across the country.
- < This will be the first of its kind to be established within the **Armed Forces Medical Services** to cater to the three kinds of patients the Army hospitals see:
 - o injuries from domestic fire accidents,
 - o electrical incidents,

- Kerosene warmers are used by jawans and officers to keep themselves warm at high altitudes.



Other Skin Banks in India:

- ◁ Private skin banks have existed for a long time in many parts of the country.
- ◁ **In 2023**, North India's first skin bank was established in **Safdarjung Hospital, New Delhi**.
- ◁ Other skin bank centres in the country are **Maharashtra, Chennai, Karnataka, Madhya Pradesh, and Odisha**.
- ◁ There are **16 skin banks in India**, with **7 in Maharashtra**.

How is the skin stored in a bank:

- ◁ Before skin harvesting, a blood sample of the deceased person is taken to test for infections like **HIV, viral markers and Hepatitis**.
- ◁ The skin is generally preserved in **85% glycerol solution**. It is stored between **4-5 degrees Celsius for up to 5 years**.
 - Glycerol is a colorless, odorless, and viscous liquid with a sweet taste, containing three hydroxyl (-OH) groups.
 - It is derived from various sources, such as natural fats and oils, and is used in various applications.

About storing skin in a skin bank:

- ◁ The skin stored in the skin bank **should be donated within 6 months** from the time of death.
- ◁ Anyone can donate skin irrespective of sex and blood group. The donor's **minimum age** should be **18 years**.
- ◁ However, the skin of persons with AIDS, Hepatitis B & C, Sexually Transmitted Diseases (STDs), skin cancer, active skin disease and septicemia are considered unfit for donation.

IISc Researchers Develop Device to Convert Infrared Light to Visible Range

News Excerpt:

Researchers at the Indian Institute of Science (IISc) have successfully fabricated a device that can **up-convert the frequency of short infrared light to the visible range**.

More about the Device:

- ◁ The **human eye can only detect light within the visible spectrum, with red light at the lowest frequency. Infrared light, which is invisible to the**

naked eye, has a frequency even lower than that of red light.

- ◁ The device **increases or up-converts the frequency of short infrared light to the visible spectrum**.
- ◁ The researchers used a 2D material to design a **non-linear optical mirror stack to achieve this up-conversion**.
- ◁ This device **also features widefield imaging capability**.
 - ◁ The **mirror stack comprises multilayered gallium selenide attached to a gold reflective surface, with a silicon dioxide layer sandwiched between them**.

Significance of the breakthrough:

- ◁ It has the potential for **applications in defence and optical communications**.
- ◁ **Traditional infrared imaging techniques rely on low-energy bandgap semiconductors or microbolometer arrays that detect heat or absorption signatures from the object under observation**.
 - However, these infrared sensors are **often bulky, inefficient, and export-restricted due to their defense applications**. There is a pressing need for indigenous and efficient alternatives.
- ◁ The IISc team's method involves directing an input infrared signal and a pump beam onto the mirror stack.
- ◁ The non-linear optical properties of the stack's material mix the frequencies, producing an output beam of higher (up-converted) frequency while retaining its other properties.
- ◁ This technique enabled the **up-conversion of infrared light with a wavelength of approximately 1,550 nm to visible light at 622 nm, which can be detected using conventional silicon-based cameras**.
- ◁ **This device can help in doing infrared imaging without using infrared sensors**.

IIT-Delhi project on antimicrobial resistance wins prize in global competition

News Excerpt:

The Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi), achieved joint second place in the Trinity Challenge's second competition for their project **'AMRSense: Empowering Communities with a Proactive One Health Ecosystem'**.

More about the project:

- ◁ The project was in collaboration with **CHRI-PATH, 1mg.com, and the Indian Council of Medical Research (ICMR)**.

- It won alongside another Indian project, 'OASIS: OneHealth Antimicrobial Stewardship for Informal Health Systems'.
- AMRSense aims to combat antimicrobial resistance (AMR) through innovative solutions.

AMRSense's key components:

- Community Engagement:** Empowering Community Health Workers (CHWs) with AI-assisted tools for accurate data collection. This addresses challenges such as low awareness, insufficient training, and motivation among over 9,00,000 ASHA workers in India.
- Data Integration:** Creating a unified AMR data ecosystem by integrating antibiotic sales, consumption data, and WHO Net-compliant surveillance data using open-source tools and APIs.
- Predictive Analytics:** Utilizing federated analytics across the One Health ecosystem to gain integrative insights into AMR trends.
- AMRaura Scorecard:** Monitoring and evaluating AMR trends to guide targeted interventions and demonstrate the benefits of data-driven approaches.

The 2022 Global Antimicrobial Resistance and Use Surveillance System (GLASS):

- It underscores alarming levels of resistance among common bacterial pathogens.
- It reveals that in 76 countries, median rates of resistance are particularly concerning: 42% of E. coli strains show resistance to third-generation cephalosporins, and 35% of Staphylococcus aureus strains are resistant to methicillin.
- Additionally, for urinary tract infections caused by E. coli, one out of every five cases exhibited reduced susceptibility to standard antibiotics such as ampicillin, co-trimoxazole, and fluoroquinolones in 2020.

DISEASES

Amoebic Meningoencephalitis

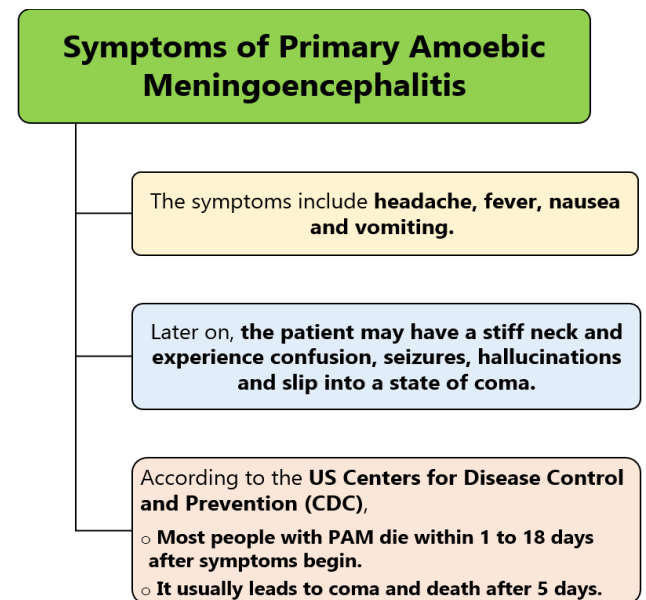
News Excerpt:

Amoebic meningoencephalitis, once a rare disease, has become a growing concern in Kerala, with three children diagnosed with the illness over the last two months, resulting in two fatalities.

About Primary Amoebic Meningoencephalitis

- Primary amoebic meningoencephalitis (PAM) is a rare brain infection that is caused by Naegleria fowleri.
 - It is a free-living amoeba or a single-celled living organism.

- Naegleria fowleri is a microscopic amoeba that lives in warm fresh water and soil around the world.
 - It can infect people when it enters the body through the nose, usually while swimming.
 - Once inside, it travels to the brain, where it destroys brain tissue and causes swelling.
- Higher temperatures of up to 115°F (46°C) are conducive to its growth, and it can survive for short periods in warm environments.
- The amoeba can be found in warm freshwater, such as lakes and rivers, swimming pools, splash pads, surf parks, or other recreational venues that are poorly maintained or minimally chlorinated.
- People cannot get infected with Naegleria fowleri from drinking water contaminated with the amoeba.
- PAM is also non-communicable.



Treatment for Primary Amoebic Meningoencephalitis

- As earlier reported, scientists haven't been able to identify any effective treatments for the disease yet.
- At present, doctors treat it with a combination of drugs, including amphotericin B, azithromycin, fluconazole, rifampin, miltefosine, and dexamethasone.
- Amoebic meningoencephalitis has a survival rate of only three per cent, making it a critical health concern.

Red rot disease

News Excerpt:

Red rot, a major concern for sugarcane growers in UP, especially in the Terai region, impacts the 'CO 0238 variety' yield, leading to widespread panic among farmers.

About red rot disease:

- It is known as the cancer of sugarcane, which usually spreads during the rainy season.

- ◁ It is caused by the fungus **Colletotrichum falcatum** and requires immediate action to prevent further crop damage.
- ◁ The fungus mainly **infects the '0238' variety of cane**, which is known as '**wonder cane**'.
- ◁ According to officials, the **disease occurs when a particular variety is sown for a long time and not changed**.
 - The disease also grows and spreads when farmers don't treat seeds and soil properly.
- ◁ Notably, **50% of 46 lakh cane farmers** in the state **cultivate the 'CO 0238 variety'** which is most sought after as its yield is 2.5 times more than regular ones.



Measures to avoid it:

The Indian Institute of Sugarcane Research, Lucknow, has given exhaustive measures to be followed while cropping the cane of 0238 variety to ensure a successful harvest. Those include:

- ◁ The mills have **to focus on immediate seed replacement** in large areas.
 - The sugar mill is further advised to restrain from increasing the acreage of a variety beyond 40% in the command area and should have a judicious blend of varieties to realize the productivity and profitability in a sustainable manner.
- ◁ **Comprehensive disease monitoring** should be taken forth to take up plant protection measures immediately after noticing the disease.
 - **Regular surveillance** of the apparently healthy sugarcane crop of other varieties adjoining the affected fields is necessary to detect red rot, especially during the summer months (up to July).
- ◁ Once an infected clump is detected, the **rest of the crop is to be sprayed** with a systemic fungicide like **Thiophanate methyl** at an interval of three weeks.
- ◁ The **affected fields**, along with surrounding fields, should (due to the presence of incipient infections) be **harvested immediately**.
 - The affected fields **must be sanitized with application of fungicides**, so that remaining soil borne inocula and the inocula dislodged during the removal of affected clumps be killed.
- ◁ A robust and dedicated **seed replacement programme** has to be taken especially in the red rot affected areas and the farmers have to be educated adequately to use quality and healthy seed.

Chandipura virus

News Excerpt:

In Gujarat's Sabarkantha district, four children have died, and two others are under treatment for suspected infection of **Chandipura virus**, which causes encephalitis.

About Chandipura virus:

- ◁ Chandipura virus is a rare and potentially deadly pathogen that causes fever, with symptoms **similar to flu and acute encephalitis (inflammation of the brain)**.
 - The pathogen is a member of the **Vesiculovirus genus** of the family Rhabdoviridae.
- ◁ It is transmitted by vectors like **mosquitoes, ticks and sandflies**.
- ◁ It can lead to rapid progression of illness, coma, and even death.
- ◁ Chandipura Virus (CHPV), a member of **Rhabdoviridae**, is responsible for an explosive outbreak in rural areas of India.
 - It affects mostly **children** and is characterized by **influenza-like illness and neurologic dysfunctions**.
- ◁ An effective **real-time one-step reverse-transcriptase PCR** assay method is adopted for the diagnosis of this virus.
- ◁ CHPV has a negative sense RNA genome encoding **five different proteins (N, P, M, G, and L)**. P protein plays a vital role in the **virus's life cycle**, while M protein is **lethal** in nature.
- ◁ There is **no specific treatment** available to date, symptomatic treatment involves use of mannitol to **reduce brain edema**.

Historical Background

- ◁ It was first identified in 1965 in Maharashtra and has been associated with various outbreaks of encephalitis in India.
- ◁ A significant outbreak occurred in 2003 in Andhra Pradesh and Maharashtra, claiming 183 lives out of 329 affected children.
- ◁ Sporadic cases and fatalities were also recorded in Gujarat in 2004.

Human African Trypanosomiasis

News Excerpt:

It is the gambiense form of human African trypanosomiasis (HAT), which is also known as sleeping sickness.

Key Points:

- ◁ HAT is caused by **protozoan parasites** that spread via **infected tsetse flies**.
- ◁ According to WHO, this is fatal if left untreated.
- ◁ Sleeping sickness has devastated communities across sub-Saharan Africa for centuries.

- It might slowly progress to cause fatigue, headaches, and even coma in several cases
- ◁ There are **two forms of HAT**, determined by the subspecies of the parasite involved:
 - **Trypanosoma brucei gambiense**, which accounts for 92 per cent of reported cases and
 - **Trypanosoma brucei rhodesiense**, responsible for the remaining 8 per cent.
- ◁ So far, seven countries have been validated by WHO for eliminating the gambiense form of human African trypanosomiasis: **Togo (2020), Benin (2021), Côte d'Ivoire (2021), Uganda (2022), Equatorial Guinea (2022), Ghana (2023), and Chad (2024).**
- ◁ The rhodesiense form of the disease has been eliminated as a public health problem in one country, Rwanda, as validated by WHO in 2022.

INTERNAL SECURITY

3D Hologram technology's role in avoiding counterfeiting

News Excerpt:

The **Japanese** government has issued its first new banknotes in two decades, featuring advanced 3D hologram technology to combat counterfeiting.

What is 3D Hologram technology?

- ◁ 3D hologram technology **creates three-dimensional images that appear to float above the surface of a material.**
- ◁ These holograms are challenging to replicate due to their complex structure, which **involves the interference of light beams to produce a detailed, multi-layered image.**



Complexity
The intricate design of 3D holograms makes them difficult to forge, providing a reliable security feature for banknotes and other valuable documents.

Verification
Holograms can be easily verified by the naked eye, allowing quick and straightforward authentication without special equipment

Customization
They can be customized with unique patterns, colours, and images specific to the issuing authority, further enhancing security.

Durability
Holograms are resistant to wear and tear, maintaining their security features over the lifetime of the banknote.

Application in Avoiding Counterfeiting:

Technological solutions to prevent counterfeiting
Intaglio Printing: Uses raised printing that gives the note a distinctive texture, which is hard to replicate.
Offset and Gravure Printing: High-precision techniques that create intricate and multicoloured

designs, making it difficult for counterfeiters to reproduce.

Holographic Strips and Patches: Incorporate holograms that change appearance when viewed from different angles.

Color-shifting Inks: Use inks that change color based on the viewing angle, providing an easy way for people to verify authenticity.

Kinegrams: Advanced holographic images that create movement or 3D effects when the note is tilted.

Watermarks: Complex designs embedded into the paper that are visible when held up to the light.

Security Threads: Threads that run through the paper, often with text or images that can be seen when held against light. Some threads can fluoresce under UV light.

Microprinting: Extremely small text that is clear under magnification but difficult to reproduce with standard printing techniques.

UV and Infrared Inks: Inks that are only visible under ultraviolet or infrared light, making them difficult to detect and reproduce.

Thermochromic Inks: Inks that change colour with temperature changes.

Magnetic Inks: Inks that contain magnetic properties, which can be detected by special machines.

Digital Watermarking: Embedding invisible digital codes within the design that can be verified with special equipment.

QR Codes and Barcodes: Scannable codes that contain information about the note's authenticity and can be verified using mobile devices or specialized readers.

Nano-Optic Features: Using nanotechnology to create intricate optical features that are extremely difficult to counterfeit.

RFID Tags: Embedding radio-frequency identification tags within the currency for machine verification.

Magnetic Strips: Including magnetic strips that can be read by machines to verify authenticity.

Exercise Pitch Black

News Excerpt:

The **Indian Air Force (IAF)** announced that its **Su-30 MKI fighter jets** will take part in a major **biennial multinational aerial warfare exercise** in **Australia**.

About this exercise:

- The event, known as '**Exercise Pitch Black 24**,' will run from **July 12 to August 2** and is set to be the **largest edition** in its history, with participation from **20 countries**.
- Held **every two years since 1998**, it focuses on **large-force employment missions** involving large numbers of international aircraft.

- It was **first held** in New South Wales in June **1981** as a three-day air defence exercise.
- The name 'Pitch Black' is believed to be **derived from the emphasis on night-time flying** over large unpopulated areas during these early exercises.
- According to the **Royal Australian Air Force (RAAF)**, this year's exercise will be the biggest in its **43-year history**.

Exercise Udara Shakti 24:

- Upon returning, the **Indian Air Force (IAF)** will also participate in 'Exercise Udara Shakti 24' with the **Royal Malaysian Air Force (RMAF)** from **August 5 to 9** in **Kuantan, Malaysia**.
- **Malaysia** will be fielding their top-of-the-line **Su-30MKM fighter jets** for the exercises.
- The **participation of Su-30MKM** from Malaysia and **Su-30MKI** aircraft from India, variants of the same **Flanker design, facilitates compatibility** and streamlines joint training exercises.
- This similarity makes for **easier training** and some seriously **dynamic combat scenarios**.

Birlestik-2024

News Excerpt:

Central Asian countries initiated **joint military exercises** for the first time without the participation of regional powers Russia and China.

About the military exercise Birlestik-2024:

- The exercises, named Birlestik-2024, which means "**alliance**" in **Kazakh**, are hosted by Kazakhstan and include four other ex-Soviet states.
- The drills will take place in the **Caspian Sea and involve around 4,000 troops**, warships, aviation, artillery, and tanks.
- **Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan** are the participating countries, with Turkmenistan notably absent. Additionally, **Azerbaijan**, a Caucasus country, is participating in these exercises.

Strategic Implications:

- Traditionally, these Central Asian countries have participated in military drills alongside Russia through the **Collective Security Treaty Organization (CSTO)** and with China under the **Shanghai Cooperation Organization (SCO)**.
- This shift towards independent regional cooperation comes after decades of strife and is indicative of the **increasing self-reliance among Central Asian states**.
- The **region's rich natural resources and strategic importance as a trade route** have attracted significant international interest.
- Kazakhstan and Azerbaijan are also part of the "**Middle Corridor**," a transport route connecting China and Europe that bypasses Russia.

About the Middle Corridor:

- The **Middle Corridor**, also known as the **Trans-Caspian International Transport Route (TITR)**, is a **multimodal rail and maritime corridor** linking Chinese and European markets.
- TITR spans across **Central Asia, the Caspian Sea, and the South Caucasus**.
- The three core countries of the Middle Corridor are **Azerbaijan, Georgia, and Kazakhstan**.



ABHYAS

News Excerpt:

The **Defence Research and Development Organization (DRDO)** has successfully completed developmental trials of **High-Speed Expendable Aerial Target (HEAT) 'ABHYAS'** with improved booster configuration from Chandipur, Odisha.

About the trial:

- The trials were carried out with improved Radar Cross Section, Visual and Infrared augmentation systems.
- During the trials, various mission objectives covering the safe release of booster, launcher clearance, and endurance performance were successfully validated.

About ABHYAS:

- ABHYAS has been designed by **DRDO's Aeronautical Development Establishment, Bengaluru**, and developed through Production Agencies - **Hindustan Aeronautics Limited & Larsen & Toubro**.
- It offers a **realistic threat** scenario for weapon systems practice.
- This indigenous system is designed for **autonomous flying** with the help of an autopilot, a laptop-based Ground Control System for aircraft integration, pre-flight checks, and autonomous flight.
- Abhyas has **RCS, Visual and IR augmentation systems** required for weapon practice.



- It also has a feature to record data during flight for post-flight analysis.

eSakshya App

News Excerpt:

The Union Ministry of Home Affairs (MHA) rolled out a mobile-based application called eSakshya (e-evidence) alongside the new criminal laws on July 1.

Key Features of eSakshya:

- **Crime Scene Documentation:** Police officers can record the scene of the crime, search, and seizure operations, with each recording being a maximum of four minutes long. Multiple recordings can be uploaded for each First Information Report (FIR).
- **Selfie Upload:** Officers must upload a selfie after completing the procedure to ensure accountability.
- **Cloud-Based Storage:** The recordings are uploaded to a cloud platform, ensuring accessibility and secure storage.

National Informatics Centre

- Developed by the **National Informatics Centre (NIC)**, the mobile application will be available to all police stations that register and download it.

Process of uploading

- Police have **two options for use**.
 - **If connectivity is an issue**, police can record the crime scene on their personal devices, generate a hash value, and upload the file at the police station, simultaneously sending it to the judicial officer via a designated computer.
 - With **good internet speed**, they can directly upload through eSakshya.

Javelin Missiles

News Excerpt:

India and the United States held discussions on the co-production of American Javelin missiles in India.

More about the news:

- The collaboration aims to meet the Indian military's significant demand for advanced **anti-tank guided missiles (ATGMs)**.

- Javelin missiles, developed and produced by American defence giants, are **renowned for their advanced technology and effectiveness in various combat scenarios**.



Javelin Missiles:

- The Javelin missile system is a **third-generation ATGM** equipped with a fire-and-forget capability.
- This **allows the operator to guide the missile to its target without maintaining a line of sight, significantly increasing its operational effectiveness and safety**.
- The missile employs an advanced imaging infrared seeker and has a tandem warhead designed to defeat modern armour, including **explosive reactive armour (ERA)**.
- The missile is **shoulder-fired**, making it **lightweight and easy** for troops to carry, even in difficult terrain.
- The system consists of the missile itself, a launcher, a target acquisition system, and a fire control unit.

Cyber Mercenaries

News Excerpt:

UN chief warns of 'Cyber mercenaries' amid a spike in Weaponizing Digital Tools.

More about the news:

- Revolutionary advancements in digital technologies are reshaping economies and societies at an unprecedented pace.
- These technologies **are fostering greater connectivity, enabling access to government services, and boosting economic and financial inclusion**.
- **The very connectivity driving these benefits also exposes vulnerabilities**.

Rise of Cyber Mercenaries and Hacktivists:

- "Cyber mercenaries" are criminal organizations **hired to conduct illicit activities online** and a "legion of hate merchants" spreading fear and division through the internet.
- Cyberattacks frequently target **essential public services such as healthcare, banking, and telecommunications**.
- So-called **civilian 'hacktivists'** are entering the fray and, in many cases, are blurring the line between combatants and civilians.
- It involves the complex nature of modern cyber threats where non-state actors play significant roles.

Threats:

- There is a rise of new vulnerabilities from the integration of digital tools with weapon systems, including **autonomous systems**.
- The misuse of digital technology is becoming more sophisticated and stealthier, with the proliferation of malware and **AI-enabled cyber operations**.
- Total **ransomware payments** reached \$1.1 billion in 2023, making it a significant threat.
- Beyond financial costs, malicious cyber activities **undermine public institutions, electoral processes, and online integrity**.

National Forensic Infrastructure Enhancement Scheme (NFIES)

News Excerpt:

The Union Cabinet has approved the **National Forensic Infrastructure Enhancement Scheme (NFIES)** with an outlay of **Rs 2,254.43 crore** for the period from **2024-25 to 2028-29**. The scheme's financial outlay will be covered by the **Ministry of Home Affairs' budget**.

More about the news:

- The Cabinet has approved the following components under this scheme:
 - Establishment of Campuses of the **National Forensic Sciences University (NFSU)** in the country.
 - Setting up more central **forensic science laboratories** enhancing the existing infrastructure of NFSU, Delhi.

Significance of the scheme

- This development is particularly significant given the **new criminal laws** that came into effect on **July 1**, mandating **forensic investigations for offences with punishments of seven years or more**.
- This initiative aims to **bolster scientific investigations** and **improve conviction rates** in criminal cases nationwide.
- The MHA highlighted the scheme's focus on **high-quality, trained forensic professionals** for timely and **scientific evidence examination**, leveraging **technological advancements** and evolving crime methods.
- The establishment of **new NFSU campuses** and **Central Forensic Science Laboratories** aims to address the shortage of trained forensic manpower.

National Forensic Sciences University (NFSU)

- NFSU, formerly known as **Gujarat Forensic Sciences University (GFSU)**, is the **world's first and only university dedicated exclusively to forensic science** and its allied subjects.

- The university was **established on February 11, 2009**, in **Gandhinagar, Gujarat**.
- NFSU was recognized as an **Institution of National Importance** and also as a **central university** in **October 2020** through the **National Forensic Science University Act**.
- The university aims to **create professional experts in forensic sciences** to address the global shortage of such experts.
- It was established in response to the increasing number of crimes involving **sophisticated technologies** and evolved modus operandi.

Tapas Drones

News Excerpt:

In a boost for Made-in-India weapon systems, the **Indian Navy** is set to place an order for four Tapas drones built in India by the DRDO.

About the Tapas Drones:

- It is a medium-altitude, long-endurance (MALE) drone developed by the **Defence Research and Development Organization (DRDO)**.
- These drones, designed and manufactured in India, will be deployed for **maritime surveillance operations**.
- The manufacturing of these drones will be undertaken by a consortium comprising **Bharat Electronics Limited (BEL)** and **Hindustan Aeronautics Limited (HAL)**.
- The consortium is committed to expediting the delivery process, with the first drone expected to be ready within **24 months** of the contract's signing.
- The Tapas drones till now have not been able to fully meet the **Joint Services Qualitative Requirements of flying at 30,000 feet for over 24 hours** at a stretch and have been excluded from the category of mission mode projects.
- However, during recent trials, the **drones successfully reached an altitude of 28,000 feet and sustained flight for over 18 hours**.

Medium Range-Microwave Obscurant Chaff Rocket

News Excerpt:

The Defence Research and Development Organization (DRDO) has handed over the Medium Range-Microwave Obscurant Chaff Rocket (MR-MOCR) technology to the Indian Navy.

MR-MOCR Technology:

- The MR-MOCR is designed **to help naval assets avoid radar detection by creating a microwave shield that obscures radar signals**.

- The rocket is **equipped with special fibres possessing unique microwave obscuration properties.**
- When fired, **these fibres form a microwave obscurant cloud in space, which spreads over a sufficient area and persists long enough to effectively reduce radar detection.**
- It protects against hostile threats and is equipped with **radio frequency seekers.**

Significance of the Development:

- The microwave obscurant cloud covers a wide area and remains effective for a **significant duration**, enhancing the stealth of naval platforms and assets.
- This technology is an **addition to the Indian Navy's defensive capabilities.**
 - By reducing radar detection, MR-MOCR provides naval assets with **increased stealth**, making them less vulnerable to enemy radar systems.
 - This enhanced protection is crucial for maintaining the **operational effectiveness and security of naval assets** in hostile environments.
- The ability to create a microwave shield around naval assets ensures that they are **better protected** against potential threats.

SEBEX 2

News Excerpt:

India's newly developed most powerful **non-nuclear bomb** is **2x more lethal** than TNT (Trinitrotoluene).

More about the news:

- Certified by the **Indian Navy**, **SEBEX 2** marks a leap forward in explosive power, boasting a **TNT equivalent of 2.01.**
- This places it among the most potent **non-nuclear explosives globally**, aimed at **revolutionizing various munitions** without compromising on weight.

Enhance India's military capabilities.

- Developed by **Economic Explosives Limited (EEL)** under the **Make in India initiative**, **SEBEX 2** utilizes a **high-melting explosive (HMX) composition.**
- This formulation **significantly enhances the lethality of warheads**, aerial bombs, artillery shells, and other munitions.
- **SEBEX 2** has been evaluated, tested and certified by the Navy under its Defence Export Promotion Scheme.

Certifications and Future Developments

- SEBEX 2 has undergone rigorous testing and certification under **the Indian Navy's Defence Export Promotion Scheme.**
- EEL is also working on another variant that will have an explosive power graded at 2.3 times of TNT.

Complementary Technologies

- In addition to SEBEX 2, the Indian Navy has certified **SITBEX 1**, a thermobaric explosive known for its extended blast duration and intense heat generation.
- This makes it highly effective in demolishing enemy bunkers, tunnels, and fortified positions. **SIMEX 4**, an insensitive munition, has also received certification, emphasizing safety in storage, transport, and operation.

Global Significance:

- The performance of SEBEX 2, coupled with advancements in SITBEX 1 and SIMEX 4, underscores **India's growing stature** in military technology innovation.
- These developments not only bolster **national defence capabilities** but also position India as a **potential exporter** of advanced explosive technologies.
- With ongoing developments and certifications, India is poised to play a **crucial role in shaping the future of military explosives.**

Malware 'Snowblind'

News Excerpt:

A new type of **malware, Snowblind** has appeared on **Android phones** that can **steal data** by **bypassing security measures.**

More about the news:

- It uses a **security feature** known as "**Seccomp**" to hide among legitimate programs.
- Snowblind specifically targets apps that **handle sensitive user information.** Snowblind **injects malicious code** into the targeted app before its security checks can run, allowing it to install a filter within seccomp.
- This filter **manipulates the system calls** made by the app, interrupting and **blocking the app's security checks**, thereby preventing malware from being detected.

Implications for Users

- Snowblind's use of a security feature **to evade detection** makes it a particularly **dangerous threat.**
- Its targeted approach **minimizes the impact on device performance**, reducing the likelihood of users noticing anything unusual.

GEOGRAPHY

Denisovan Fossil

News Excerpt:

A detailed analysis of 2,500 mammalian bones from the **Baishiya Karst Cave** on the **Tibetan Plateau** has provided fresh insights into the Denisovans' subsistence practices.

About Denisovan:

- The Denisovans are an **extinct species or subspecies of archaic humans** in the **genus Homo**.
- They are a **sister group to the Neanderthals** and share a common ancestor with modern humans.
- Denisovans, who coexisted with modern humans and Neanderthals in Eurasia, **were the smallest of the three species, standing 3 to 4 feet tall**.
- Modern humans, **originating in Africa 300,000 years ago, interbred with Denisovans and Neanderthals after migrating to Asia and Europe around 70,000 years ago**.
- They inhabited these caves at an elevation of 3,280 meters above sea level for approximately 100,000 years.



Methodology used:

- A recent study has identified a Denisovan rib specimen among the cave findings, **dating it to 48,000 to 32,000 years ago**.
- ◁ This contradicts previous evidence that Denisovans occupied the plateau between 160,000 and 60,000 years ago, **indicating their more recent existence**.
- The researchers employed **Zooarchaeology by Mass Spectrometry (ZooMS)** to **differentiate between bone collagen of various animals, analyzing protein amino acid structures**.
- ◁ This advanced technique allowed precise identification of the species **the bones belonged to and dated them accurately**.

Findings:

- The Baishiya Karst Cave, which previously **yielded a Denisovan jawbone, now includes another fossil confirmed as Denisovan**.
- The study reveals that the Denisovans' **diet consisted primarily of mammals**.
- **Evidence suggests** that Denisovans processed these bones, removing meat, extracting bone marrow, and **utilizing bones for tools and hides**.

- While Neanderthals, who lived in Europe and Western Asia, are well-studied, Denisovans **were only identified in 2010 from fossils found in Siberia's Denisova Cave**.
- Since then, Denisovan remains have been found in **Laos and the Tibetan cave**.
- The **recent rib bone** discovery **came from a Denisovan individual who was different from the jawbone previously identified**.
- The researchers believe **that only Denisovans occupied the Baishiya Karst Cave**, efficiently utilizing local animal resources.
- The findings suggest a **diverse ecosystem with grasslands and small forested areas** around the cave, explaining the Denisovans' long-term habitation in the Ganjia Basin.

Lithium

News Excerpt:

In Korba, Chhattisgarh, a private exploration company funded by the **National Mineral Exploration Trust (NMET)** has found hard rock lithium deposits ranging from **168 to 295 parts per million (ppm)**. Lithium exploration in other states, however, has not been as fruitful.

Uses of Lithium:

- Lithium compounds are used in
 - Ceramics and glass
 - Primary aluminium production
 - The manufacture of lubricants and greases
 - Rocket propellants
 - Vitamin A synthesis
 - Silver solders
 - Underwater buoyancy devices
 - Increasingly in batteries
- **Lithium batteries** are proving to be an effective and affordable alternative to traditional batteries, and also used in new battery applications. **More than 80%** of Lithium mined is used in batteries.
- Lithium is mixed with other light metals such as aluminum and magnesium to **form strong, light-weight alloys** (an alloy is a mixture of metals).
- Some lithium, in the form of lithium carbonate or lithium citrate, is **used as medicine** to treat gout (an inflammation of joints) and to treat serious mental illnesses like **bipolar disorder**.

Lithium reserves in India:

- **Jammu & Kashmir:** The Geological Survey of India (GSI) had, for the **first time in India's history**, established Lithium inferred resources of 5.9 million tonnes in **Jammu and Kashmir's Reasi district**.

- **Rajasthan:** Degana in Rajasthan’s Nagaur district is expected to meet **80% of the total country’s demand**.
- **Other potential sites are:**
 - **Rann of Kutch** in Gujarat.
 - Pegmatite belts in **Chhattisgarh and Odisha**.

Indian contribution in Overseas:

Khanij Bidesh India Limited (KABIL), a joint venture of three public sector companies under the Mines Ministry, secured rights to explore, develop, and extract Lithium across five blocks in **Argentina’s Catamarca Province**.

DISASTER-MANAGEMENT

Arctic Wildfires

News Excerpt:

Wildfires have been a natural part of the **Arctic’s boreal forest and tundra ecosystems**, but in recent years, their frequency and scale in the regions have increased.

More about the news:

- Smoke from raging wildfires has once again darkened the skies over the Arctic. According to **Europe’s Copernicus Climate Change Service (C3S)**, it is the third time in the past five years that high-intensity fires have erupted in the region.
- The monthly **total carbon emissions** from the wildfires are **the third highest of the past two decades, at 6.8 megatonnes of carbon**, behind 2020 and 2019, which recorded **16.3 and 13.8 megatonnes of carbon, respectively**.

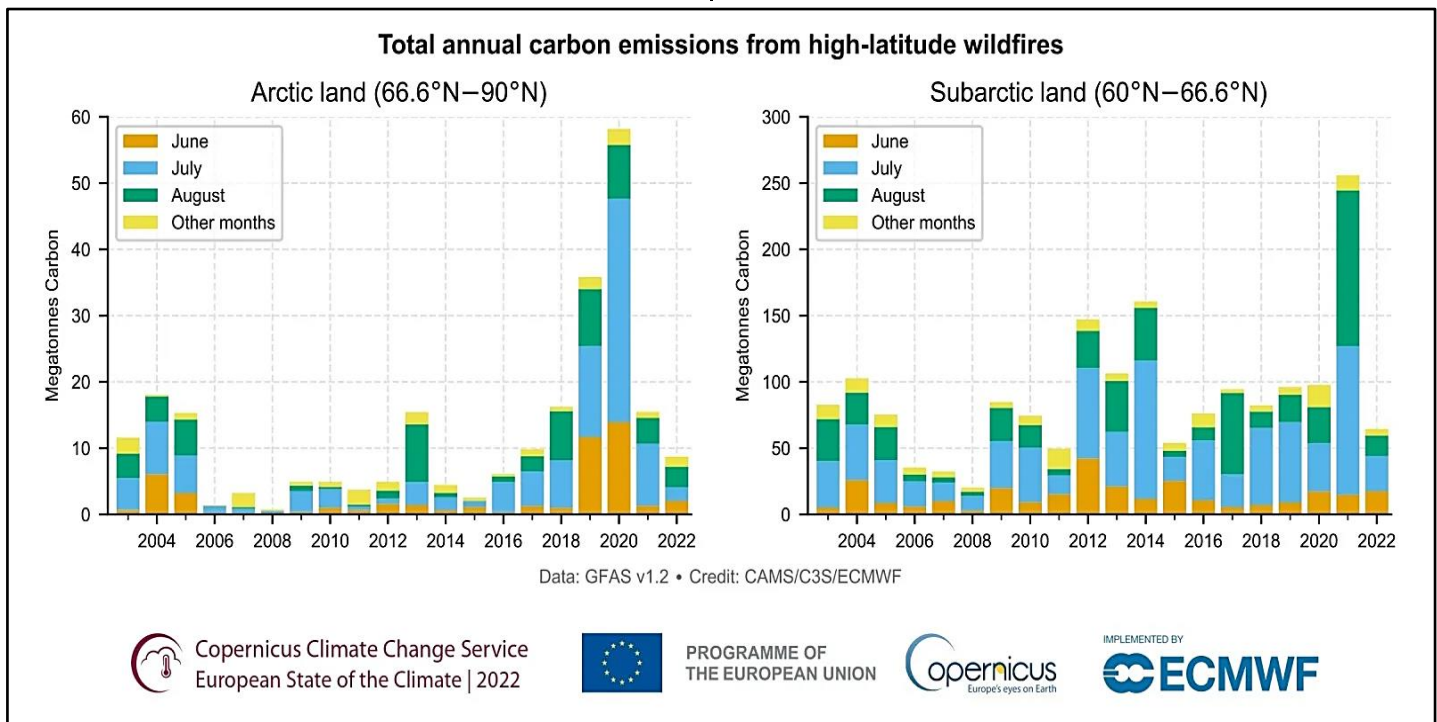
Arctic wildfires have become worse.

- The Arctic has been warming **roughly four times as fast** as the world.

- This **fast-paced warming** has led to more frequent lightning in the Arctic, which has further increased the **likelihood of wildfires** lightning-sparked fires have more than doubled in **Alaska and the Northwest Territories** since 1975, according to a 2017 study.
- **Soaring temperatures** have also **slowed down the polar jet stream** — responsible for circulating air between the mid- and northern latitudes — due to less of a temperature difference between the Arctic and lower latitudes.
 - As a result, the **polar jet stream** often gets **“stuck” in one place**, bringing **unseasonably warm weather to the region**.
 - It also blocks out **low-pressure systems**, which bring clouds and rainfall, possibly leading to intense heat waves, which can cause more wildfires.
- All three factors — **rising temperatures, more frequent lightning and heat waves** will most likely worsen in the coming years, thereby causing more wildfires in the Arctic.

Arctic wildfires exacerbate global warming.

- When wildfires ignite, they **burn vegetation and organic matter**, releasing the **heat trapping greenhouse gases (GHGs)** such as carbon dioxide (CO₂) into the atmosphere.
- The major concern is the **carbon stored underneath the region’s permafrost** — any ground that stays frozen for at least two years straight.
- **Wildfires make permafrost more vulnerable** to thawing as they destroy upper insulating layers of vegetation and soil.



PROGRAMME OF THE EUROPEAN UNION



- This can cause ancient organic materials, such as **dead animals and plants, to decompose and release carbon into the atmosphere.**
- In case a large-scale thawing of Arctic permafrost is triggered, it would be **impossible to stop the release of carbon.**
- Worsening the situation, **post-fire permafrost emissions are unmonitored and excluded** from climate models, making their impact on climate change unmeasurable.

Hurricane Beryl

News Excerpt:

Hurricane Beryl has set a record as the earliest storm in the Atlantic hurricane season to reach the highest Category 5 classification.

Classification of Hurricanes:

- Hurricanes are classified using the **Saffir-Simpson Hurricane Wind Scale into five categories** (Category 1 to Category 5) based on their sustained wind speeds.
- Storms that reach **Category 3 and higher are considered major hurricanes** due to their potential to inflict significant damage.

Why did Beryl become a Category 5 hurricane so early?

- Generally, the first major hurricanes do not form until **September, as the ocean is not warm enough** to fuel such strong hurricanes.
- Since last year, **ocean temperatures in the Atlantic** have mostly been in record-breaking territory.
- Not only are **sea surface temperatures rising**, but **ocean heat content (OHC)**—a measure of the amount of heat present in ocean water—is also soaring.
- The **graph shows** that this year's OHC (in red), for the area of the Atlantic Ocean where most major hurricanes like Beryl form, has been far above the 2013-2023 average (in blue).

Impact of climate change on hurricanes:

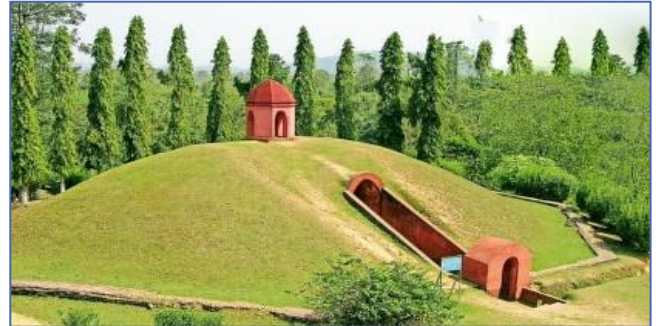
- Scientists agree that, at the very least, climate change makes hurricanes **more prone to rapid intensification** — where maximum wind speeds increase very quickly.
- The frequency and magnitude of these rapid intensification events in the Atlantic seem to have spiked **between 1971 and 2020.**
- Therefore, as the world and its oceans continue to become warmer, scientists are concerned that even more powerful hurricanes could form in the near future.

ART & CULTURE

Ahom 'Moidam'

News Excerpt:

Ahom era 'Moidams', resting place of royal families, in Assam's Charaideo district have been recommended for inclusion in the **UNESCO World Heritage List.**



More details about the news:

- **The International Council on Monuments and Sites (ICOMOS)** has prepared a report '**Evaluations of Nominations of Cultural and Mixed Properties**' for the 46th ordinary session of the World Heritage Committee, to be held in New Delhi.
- ICOMOS has recommended that Moidams the Mound-Burial System of the Ahom Dynasty be inscribed on the World Heritage List on the basis of **criteria (iii) and (iv).**
- These were **first included in the Tentative List in April 2014.**

About the International Council on Monuments and Sites (ICOMOS):

- France-based ICOMOS, an **advisory body to UNESCO for cultural heritage**, is an international **non-governmental organization** and is dedicated to the conservation and enhancement of architectural and landscape heritage throughout the world.

About the Moidams:

- ◁ The Ahom dynasty, ruling from the **13th to the early 19th century CE**, significantly impacted Assam by fostering **political unity, cultural amalgamation, and economic stability.**
- ◁ **Architecturally**, the Ahoms are known for their unique funerary structures called **Moidams**, which are **burial mounds for kings, queens, and nobles.** These structures, found primarily in **Charaideo, the first Ahom capital**, are distinct in style and reminiscent of their Tai origin.
- ◁ The Moidams are **hemispherical earthen mounds with an internal vault** for the deceased, often accompanied by treasures and personal belongings.
- ◁ Initially, the vaults were made of **wood**, but later rulers like Rudra Singha replaced them with **stone and brick.**
- ◁ The Ahoms **buried their dead along with their valuables and attendants**, a practice banned by Rudra Singha.

- ◁ The Ahoms' burial practices evolved over time, influenced by Hinduism, which led them to adopt cremation for most of their population. However, the burial system is **still practised by certain priestly sections and the Chao-dang clan.**

The Criteria for Selection: To be included on the World Heritage List, sites must be of outstanding universal value and **meet at least one out of ten selection criteria.**

- (i) to represent a masterpiece of human creative genius;
- (ii) to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;
- (iii) to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
- (iv) to be an outstanding example of a type of building, architectural or technological ensemble or landscape that illustrates (a) significant stage(s) in human history;
- (v) to be an outstanding example of a traditional human settlement, land-use, or sea-use that is representative of a culture (or cultures) or human interaction with the environment, especially when it has become vulnerable under the impact of irreversible change;
- (vi) to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);
- (vii) to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;
- (viii) to be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;
- (ix) to be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, freshwater, coastal and marine ecosystems and communities of plants and animals;
- (x) to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

Centre Launches Project to Produce 22,000 Books in Indian Languages

News Excerpt:

The **Union Ministry of Education** and the **University Grants Commission (UGC)** launched a project to produce **22,000 books** in **Indian languages** over the **next five years.**

About ASMITA:

- The **ASMITA (Augmenting Study Materials in Indian Languages through Translation and Academic Writing)** project aims to foster a robust environment for **translating existing study materials and creating new academic literature** in various Indian languages within higher education disciplines.
- This initiative aligns with the **National Education Policy (NEP) 2020** and is one of several efforts by the government to **promote Indian languages** in the education system.
- The project will be a collaborative endeavour between the **UGC** and the **Bharatiya Bhasha Samiti**, a high-powered committee under the Union Ministry of Education.
- The goal is to produce **1,000 books in 22 languages** within **five years, totalling 22,000 books** in Bharatiya Bhasha.
- **Thirteen nodal universities** have been identified as the ones to lead this project, along with member universities from various regions.

Standard Operating Process (SOP):

- The UGC has developed a **Standard Operating Process (SOP)** for the book writing process in each assigned language.
- **SOP includes** identification of **Nodal Officers and authors, allocation of title, subject and program, writing and editing, submission of the manuscript, review and plagiarism check, finalization, designing, proofreading, and e-publication.**

Bahu bhasha Shabdakosh:

- Additionally, the ministry launched **Bahubhasha Shabdakosh**, a **multi-language dictionary** of Indian languages.
- Developed by the **Central Institute of Indian Languages (CIIL)** in collaboration with the **Bharatiya Bhasha Samiti**, this dictionary will facilitate the use of Bharatiya words, phrases, and sentences for various modern domains such as **IT, Industry, Research, and Education.**

Bharatiya Bhasha Samiti:

- The **Ministry of Education** established the **Bharatiya Bhasha Samiti in 2021**, a High-Powered Committee dedicated to **advancing Indian languages.**
- This committee's **primary role** is to facilitate the **comprehensive and interdisciplinary growth of Indian languages** as outlined in the **National Education Policy-2020.**
- Additionally, it advises the Ministry on strategies for **revitalizing language education** and research across various institutions nationwide.
- It also collaborates with **Central and State Government institutions** involved in language teaching, research, and promotion to coordinate efforts effectively.

Project PARI

News Excerpt:

The **Ministry of Culture** has introduced **Project PARI** (Public Art of India) in connection with the 46th Session of the **World Heritage Committee Meeting**.

About Project PARI

- **Project PARI** aims to enhance **Delhi's aesthetic and cultural landscape**, adding grandeur to the national capital's **rich historical legacy**.
- **Lalit Kala Akademi** and the **National Gallery of Modern Art** aim to present public art that draws from millennia of artistic heritage (lok kala/lok sanskriti) while integrating **modern themes and techniques**.
- This endeavour highlights the **intrinsic value of art** in Indian society, showcasing the nation's enduring commitment to **creativity and artistic expression**.
- Artists are working on various sites **throughout Delhi** to **beautify public spaces** for the upcoming event.

Significance of Project PARI

- Public art installations transform urban landscapes into accessible **galleries**, making art available to all beyond traditional venues like **museums and galleries**.
- By integrating art into **streets, parks, and transit hubs**, these initiatives **democratize art**, ensuring artistic experiences are part of everyday life.

Themes of Project PARI

- The sculptures created for Project PARI encompass various themes, such as **tributes to nature**, ideas inspired by the **Natyashastra, Gandhi ji, toys of India, hospitality, ancient knowledge, Naad or Primeval Sound, Harmony of Life, and Kalpataru** – the divine tree.
- Additionally, in line with the **46th World Heritage Committee Meeting**, some artworks and sculptures draw inspiration from World Heritage Sites like **Bhimbetka** and India's **seven natural World Heritage Sites**.

Central Government to Revise Classical Language Status Criteria

News Excerpt:

The upcoming **Maharashtra Assembly election** in October has reignited the long-standing demand for **Marathi** to be granted **classical language status**.

More About the News:

- The **Linguistics Expert Committee** submitted a report on October 10 last year, recommending **certain adjustments** to the criteria for recognizing classical languages.
- This means that languages currently under consideration for classical status, particularly **Marathi**, will need to wait until the **revised criteria** are published.

Linguistics Expert Committee

- The Linguistics Expert Committee includes representatives from the **Union Ministries of Home and Culture**, along with **four to five linguistic experts**. It is chaired by the **president of the Sahitya Akademi**.

Demand for Classical Languages

- Currently, India has **six classical languages: Tamil, Sanskrit, Telugu, Kannada, Malayalam, and Odia**, with the last designation granted in 2014.
- Over the years, there have been **demands for classical status** for languages like **Marathi, Bengali, Assamese, and Maithili**. **Marathi's** case has been pending for over a decade.

Current Criteria for Classical Language

- **High antiquity** of **early texts/recorded history** over **1,500-2,000 years**.
- A body of **ancient literature or texts** valued as a **heritage by generations of speakers**.
- An **original literary tradition**, not borrowed from another speech community.
- **It is distinct from its modern form**, possibly with a discontinuity between the classical language and its later forms or offshoots.

Benefits of Classical Language

- Once a language is designated as classical, the Education Ministry provides benefits to promote it, such as **international awards** for scholars, establishing a **centre of excellence**, and creating **professional chairs** in **Central universities**.

Kalamkari Artforms

News Excerpt:

The once-flourishing Kalamkari art form is now struggling for survival in contemporary times.

Current Challenges

- **Worker Shortage:** Due to power looms, increased raw material prices, declining wages, and youth migration.

World Heritage Committee

- The World Heritage Committee convenes **annually** and comprises representatives from **21 States Parties** to the Convention, elected by their **General Assembly**.
- The Committee oversees the implementation of the **World Heritage Convention**, determines the **utilization** of the **World Heritage Fund**, and **allocates financial assistance** based on requests from States Parties.
- It has the authority to make the final decision on the **inscription of properties** on the **World Heritage List**.
- India will host the **46th session** of the **UNESCO World Heritage Committee** from July 21-31 at the **Bharat Mandapam** in **New Delhi**.

- **Decline in Handlooms:** From 15,000 looms in the 1980s-90s to 1,000 today.
- **Recognition:** Pedana Kalamkari registered in the Geographical Indications Registry in 2013.
- **Other challenges:** The declining number of block makers and lack of local respect and awareness.

Economic Aspects

- **Major Customers:** It is being supplied to renowned apparel brands in the country, including Fab India and Aurelia, in foreign markets.
- **Historical Trade:** Exported to the Persian Gulf, Europe, and British royalty.

About the Kalamkari Artform:

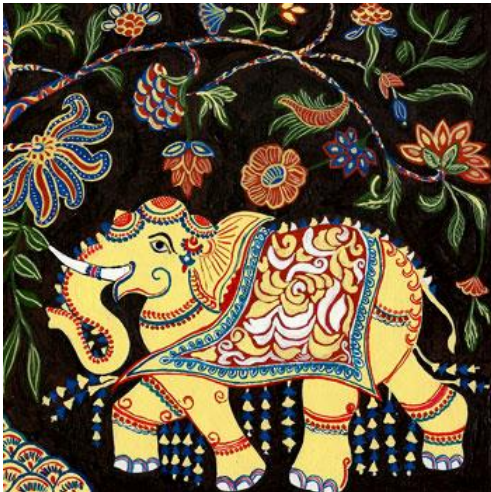
Kalamkari is a traditional Indian art form known for its intricate and **beautiful hand-painted or block-printed designs on fabric**.

It has a rich history and cultural significance, particularly in the states of **Andhra Pradesh and Telangana**.

Origins: The word 'Kalamkari' is derived from two Persian words, '**Kalam**' meaning **pen** and '**Kari**' meaning **craftsmanship**. It originated in the 16th century during the reign of the Golconda Sultanate and was patronized by the Mughals.

Regions: The art form primarily developed in two regions:

- **Machilipatnam (Masulipatnam):** Known for its block-printed style.
- **Srikalahasti:** Famous for its pen-and-brush hand-painted style.



- This ancient painting is over **5,000 years older than the previous record holder**.

About Painting

- Located in the **Leang Karampuang cave** on the **Indonesian island of Sulawesi**, the painting features a **red pigment** image of a **pig** with its **mouth partially open**, accompanied by **three part-human, part-animal stick figures**, or **therianthropes**.

Significance of the Painting

- The painting is significant for its **age** and the **dynamic scene** it depicts.
- According to an article by **The Conversation**, one figure appears to hold **an object near the pig's throat**, another is positioned **upside-down above the pig with legs splayed out**, and a **larger figure**, possibly wearing an **elaborate headdress**, holds an **unidentified object**.
- The depiction suggests a story is being told through these **human-like figures** and their interaction with the pig.

Why is this Discovery Important?

- The researchers noted that this discovery pushes back the origins of figurative art in human history.
- The study highlights that **Neanderthals** began marking caves as early as **75,000 years ago**, but their markings were typically non-figurative.
- The findings suggest that **early Homo sapiens** in **Sulawesi** had a rich culture of storytelling, as evidenced by the frequent depiction of **anthropomorphic figures** and animals in their cave art during the **Late Pleistocene**, predating similar scenes in Europe by tens of millennia.

New Dating Technique:

- The age of the painting was determined using a **uranium series (U-series)** analysis of **calcite deposits** overlying the rock art in the limestone caves.
- This method involves using **laser beams** to compare the ratio between the **parent isotope (uranium)** and the **daughter isotope (thorium)**, allowing researchers to date the paintings accurately.

The World's Oldest Cave Art is 51,200 Years Old

News Excerpt:

A recent study has revealed that the **world's oldest** known **figurative cave painting** dates back **51,200 years**.

More About the News:

- The study, titled "**Narrative cave art in Indonesia** by 51,200 years ago," was published in the journal Nature.

Significance of 'Abhaya Mudra'

News Excerpt:

India's Leader of Opposition in Lok Sabha invoked the Abhaya Mudra, the gesture of the raised open palm that is commonly understood as conveying reassurance and freedom from fear.

Mudras in Buddhism:

Meaning and Context:

- The term "mudra" in Sanskrit can mean seal, mark, sign, or currency, but in **Buddhism**, it primarily refers to hand and arm gestures used during rituals or depicted in Buddhist art.
- These gestures are integral to conveying **spiritual teachings and the inner realizations** of buddhas, bodhisattvas, and deities.

Early Depictions and Origin:

- The physical depictions of the Buddha (Buddharupa) began around the first millennium CE. Initially appearing in **Gandhara art**, which blended Greek and Indian styles, and later in **Gupta art** in the Gangetic plains of India, these early images of the Buddha showcased specific mudras that symbolized different aspects of his teachings and enlightenment.



Common Mudras: Initially, four primary mudras were depicted in early Buddharupas:

- **Dhyana Mudra:** Gesture of meditation, where the hands rest in the lap or on the knees with palms facing upwards.
- **Bhumisparsha Mudra:** Gesture of touching the earth, symbolizing the moment of the Buddha's enlightenment.
- **Abhaya Mudra:** Gesture of fearlessness and protection, with the right hand raised and facing outward.
- **Varada Mudra:** Gesture of granting wishes or charity, with the hand held downward, palm facing outward.
- **Evolution in Mahayana and Vajrayana Buddhism:** As Buddhism spread and evolved into Mahayana and Vajrayana traditions, the repertoire of mudras expanded significantly. These traditions introduced numerous new mudras, each carrying profound symbolism related to specific teachings, deities, or spiritual practices.
- **Tantric Use of Mudras:** In Vajrayana Buddhism, mudras are utilized in dynamic ritual practices. They serve multiple purposes, such as invoking deities, performing symbolic gestures during rituals, and representing various attributes of enlightened beings.

- **Symbolism and Ritual Practice:** Mudras are not merely static gestures but are dynamic expressions that embody the qualities and teachings of Buddhist philosophy. They are used in rituals to deepen spiritual practice, enhance visualization, and connect practitioners with the enlightened qualities they represent.

Abhaya mudra in Hindu religion:

- Over time, the **abhaya mudra appeared in depictions of Hindu deities**, and the Buddha himself was absorbed into the Hindu pantheon as the ninth avatar of the Puranic god Vishnu.
 - The first mention of the Buddha avatar came in the Vishnu Purana (400-500 CE).
- As multiple traditions, practices, and cultural influences mingled in the great melting pot of the Hindu religion, manifestations were seen in art and visual depictions of gods. The **Abhaya Mudra was seen in the depictions, most commonly of Lord Shiva, Lord Vishnu, and Lord Ganesha.**

Kozhikode: India's First UNESCO 'City of Literature'

News Excerpt:

Kozhikode has joined the **UNESCO Creative Cities Network (UCCN)** by earning the title of **'City of Literature'** at the network's **16th annual conference in Braga, Portugal**. It is **India's First UNESCO 'City of Literature'**

More About the News:

- The **theme of this year's** UCCN annual conference is **'Bringing youth to the table for the next decade.'**
- **UNESCO grants Creative Cities status** to cities worldwide based on their cultural contributions and traditions in categories such as **Design, Film, Gastronomy, Literature, Media Arts, Music, and Folk Art.**

Ministry of Culture
Government of India

unesco

G20

India's both the nominations have been included
in the **UNESCO's Creative Cities Network**
Gwalior for Music & Kozhikode for Literature

Kozhikode

Gwalior

New Cities to Join UCCN

- In October 2023, 55 new cities were included in the UNESCO Creative Cities Network (UCCN).
- Kozhikode was designated as the 'City of Literature' and Gwalior as the 'City of Music'.
- Gwalior, located in Madhya Pradesh, was acknowledged for its rich musical heritage, while Kozhikode in Kerala was honoured for its literary excellence.
- This designation will not only bring global recognition to these cities but also facilitate international funding and collaborations with relevant institutes and promote their creative fields.

Other Indian cities in the UCCN List

- With the addition of Gwalior and Kozhikode, India now has seven cities on the UCCN list.
- The other Indian cities already on the list are Srinagar for Crafts and Folk Arts (2021), Mumbai for Film (2019), Hyderabad for Gastronomy (2019), Chennai for Music (2017), Jaipur for Crafts and Folk Arts (2015), and Varanasi for Music (2015).

UNESCO Creative Cities Network (UCCN)

- UCCN was established in 2004.
- It was to promote collaboration with and between cities that have identified creativity in seven creative areas - music, film, literature, gastronomy, media arts, design and crafts, and folklore - as a strategic factor for sustainable urban development.
- This network now includes 350 UNESCO Creative Cities worldwide.
- The Network originated from UNESCO's Global Alliance for Cultural Diversity initiative, launched in 2002.

UNESCO City of Literature program

- The UNESCO City of Literature program is a part of the larger Creative Cities Network, which was initiated in 2004.

The UNESCO Cities of Literature network includes 53 cities from 39 countries across six continents.

GOVT. SCHEMES & INITIATIVES

NITI Aayog Launches 'NITI Gear Shift Challenge'

News Excerpt:

NITI Aayog has introduced the 'NITI Gear Shift Challenge' as a part of its e-FAST India initiative.

e-FAST India

- In partnership with the World Resources Institute (WRI) India, NITI Aayog introduced e-FAST India (Electric Freight Accelerator for Sustainable Transport – India) in 2022.

- e-FAST aims to drive the shift towards cleaner and greener freight transportation.
- The platform fosters active collaborations at both national and international levels, supports the ideation and development of scalable pilot programs, and explores technology integration and related research.
- The launch of e-FAST India saw participation from major players in the automobile industry, logistics companies, development banks, and fintech companies.
- This initiative is supported by the World Economic Forum, CALSTART, and RMI India.
- The platform also focuses on raising awareness about freight electrification through on-ground demonstration pilots and evidence-based research.

More details about the news:

- NITI Aayog emphasizes that this challenge is a significant step towards sustainable freight transportation in India.
- India's freight sector is crucial to its economy, facilitating the delivery of goods to over 1.4 billion people.
- This groundbreaking hackathon is designed to encourage the development of innovative business models for the adoption of zero-emission trucks in India, addressing critical economic and environmental issues.
- Organized in collaboration with IIM Bangalore, Smart Freight Centre India, CALSTART/Drive to Zero, and WRI India, the hackathon will be conducted in two rounds.
- The challenge invites students, transport service practitioners, academics, and researchers to create business models that tackle financial, technical, and operational hurdles in the adoption of electric trucks.

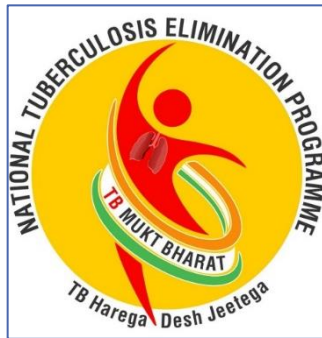
Significance of Challenge

- The challenge aims to generate practical solutions by leveraging the creativity and expertise of participants, accelerating the adoption of zero-emission trucks to benefit both the economy and the environment.
- With road freight consuming 55% of India's annual diesel and contributing nearly 40% of CO2 emissions from road transport, transitioning to sustainable solutions is imperative.
- Electrifying freight transportation is a key priority, as electric trucks present a transformative opportunity to reduce emissions, improve air quality, and enhance energy security.

National Tuberculosis Elimination Programme (NTEP)

News Excerpt:

Dr. Soumya Swaminathan has been appointed as the **Principal Advisor** at the Union Ministry of Health & Family Welfare for the National Tuberculosis Elimination Programme on a pro bono basis.



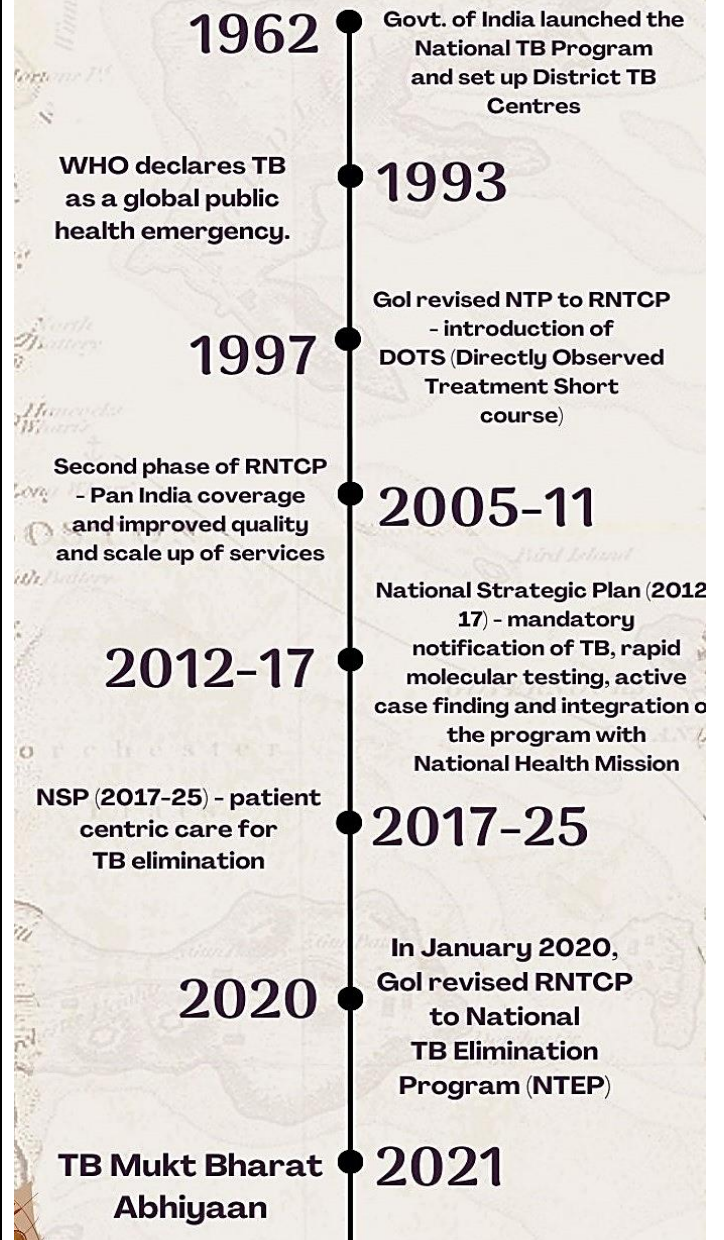
About Ni-KSHAY:

- **NI-KSHAY (Ni=End, Kshay=TB)** is the web-enabled patient management system for TB control under the National Tuberculosis Elimination Programme (NTEP).
- It is developed and maintained by the **Central TB Division (CTD), Ministry of Health and Family Welfare, in collaboration with the National Informatics Centre (NIC) and the World Health Organization (India).**
- Ni-kshay is used by health functionaries at various levels across the country both in the public and private sector, to register cases under their care, order various types of tests from Labs across the country, record treatment details, monitor treatment adherence and to transfer cases between care providers.
- It also functions as the **National TB Surveillance System and enables reporting of various surveillance data to the Government of India.**

Pradhan Mantri TB Mukta Bharat Abhiyan (PM TB MBA):

- PM TB MBA is an initiative launched by the Ministry of Health and Family Welfare (MoHFW) of India with the aim of eliminating tuberculosis (TB) by 2025.
- This initiative recognizes the multifaceted nature of the TB challenge and emphasizes the need for a multi-sectoral response involving various stakeholders, including communities and societal institutions.
- The PM TB MBA initiative is significant for its community-driven approach and its focus on reducing the stigma associated with TB while providing comprehensive support to patients.
- It involves the community in a 'Jan Andolan' to accelerate progress towards TB elimination, making it a unique model.
- Three-fold Objectives:
 - **Providing additional patient support to improve treatment outcomes.**
 - **Augmenting community involvement in meeting India's commitment to end TB.**
 - **Leveraging Corporate Social Responsibility (CSR) activities.**

EVOLUTION OF NTEP



What is Digital Bharat Nidhi?

News Excerpt:

On July 4, the **Department of Telecommunications (DoT)** unveiled draft rules to operationalize the **Digital Bharat Nidhi (DBN)**, a new initiative by the central government aimed at improving **telecom connectivity in rural areas.**

More about the news:

- According to the draft rules, the government will appoint an "**administrator**" to oversee the selection of "**DBN implementers**" through a **bidding process** or by inviting applications from eligible individuals.

- The administrator will determine the modalities of providing funding to DBN implementers on a case-by-case basis, including but not limited to full funding, partial funding, co-funding, market risk mitigation, and risk capital.

Replacing the Universal Service Obligation Fund (USOF)

- The **Digital Bharat Nidhi** will replace the previous **Universal Service Obligation Fund (USOF)**, which was funded by a **5% Universal Service Levy** charged to **all telecom operators** on their **Adjusted Gross Revenue (AGR)**.
- The **USOF** was used to finance the expansion of **telecom networks in remote and rural areas**, where private companies are less inclined to offer services due to the lack of profitability.
- Following the recent notification of parts of the **Telecom Act**, the government has proposed additional rules for **transforming the USOF into the Digital Bharat Nidhi (DBN)**, which will have a broader scope.

How the Digital Bharat Nidhi Will Operate

- Under the **Telecom Act**, contributions from telecom companies to the **Digital Bharat Nidhi** will first be credited to the **Consolidated Fund of India (CFI)**, which is the main account where all government revenues and loans are deposited.
- The government will **periodically transfer funds from the CFI to the DBN**.
- The **DBN funds will be used to support universal service through:**
 - Promoting access to and delivery of telecommunication services in **underserved rural, remote, and urban areas**.
 - Fund **research and development** in telecommunication services, technologies, and products.
 - **Support pilot projects, provide consultancy assistance**, and offer advisory support to improve connectivity.
 - Introducing **new telecommunication services**, technologies, and products.

Targeted Projects and Initiatives

- The DBN will support schemes and projects aimed at **providing telecommunication services to underserved groups** such as women, persons with disabilities, and economically and socially disadvantaged sections of society.
- These projects will focus on introducing **next-generation telecommunication technologies** in underserved areas.
- It will enhance the **affordability of telecommunication services**.

Underutilization of USOF

- Since its **inception in 2003**, the USOF has faced criticism for **underutilization**.
- **Between 2017 and 2022**, the government collected **Rs 41,740 crore** from telecom contributions to the USOF but **utilized only Rs 30,213 crore** (about 72 percent).
 - The government did **not fully utilize the USOF** in any year during this period.
- **In FY23**, the **expenditure estimates** from the **USOF** were **revised down to Rs 3,010 crore**, significantly 200% lower than the **budget estimate of Rs 9,000 crore**.
- This underutilization is largely attributed to underspending on the **Bharat Net project for village fibre connectivity**.

NIRMAN Scheme

News Excerpt:

Coal India Limited (CIL) has launched the NIRMAN scheme for SC, ST, female and Third Gender candidates appearing for the UPSC Mains Examination.

Key Points about the scheme:

- **"Noble Initiative for Rewarding Mains Aspirants of National Civil Services Examination (NIRMAN)"** is a **CSR initiative of Coal India Limited (CIL)**.
- It is launched for meritorious youth from CIL's operating districts who have qualified the UPSC Preliminary examination (for Civil Services & Forest Service) in 2024.
- The scheme offers **financial support of Rs 1,00,000 (One Lakh)** to eligible candidates.
- This initiative aligns with the **"Mission Karmayogi"** vision.

Eligibility Criteria:

- In order to be eligible for this scheme, the candidate should be a **permanent resident of any of the mining districts of CIL/ subsidiary companies**.
- S/he should have an annual family **income of less than 8 lakhs**.
- S/he should belong to a **Scheduled Caste, Scheduled Tribe, female, or third gender**.

Coal India Limited:

- CIL is a **MAHARATNA Company of the Government of India**, plays a crucial role in India's energy security, and acts as a socially responsible corporate entity that fosters education in coal-bearing areas.
- To achieve the goal of **"Viksit Bharat"** (Developed India), CIL and its subsidiaries have undertaken various initiatives to help deserving and underprivileged students from coal-bearing areas secure admissions into nationally reputed professional institutes.

PM-SHRI Scheme

News Excerpt:

The Education Ministry has halted funds under the **Samagra Shiksha Abhiyan (SSA)** for Delhi, Punjab, and West Bengal due to their reluctance to participate in the **Pradhan Mantri Schools for Rising India (PM-SHRI)** scheme.

PM Schools for Rising India (PM-SHRI)

- PM-SHRI, launched in 2022, is a **centrally sponsored initiative (centre: State:: 60:40)** with a total project cost of **Rs. 27360 crores** for the period of five years from the year 2022-23 to 2026-27.
- It aims to **upgrade and develop more than 14,500 government schools across India into exemplary institutions** that showcase the implementation of the National Education Policy (NEP) 2020.

Significance:

- Model for NEP 2020:** PM-SHRI schools will demonstrate the practical implementation of the National Education Policy 2020, serving as model institutions.
- Mentorship:** These schools **will offer mentorship to other schools in their vicinity, promoting best practices.**
- Holistic Education:** Aim to produce individuals equipped with key skills for the 21st century, going beyond traditional academic learning.
- Inclusive and Modern Infrastructure:** Ensure that schools have the necessary facilities to provide a comprehensive and inclusive education.
- Sustainable Practices:** Promote environmental consciousness and sustainable practices within the school curriculum and infrastructure.

Funding discontinued:

- Delhi, Punjab, and West Bengal** have not received the third and fourth instalments of SSA funds for the last financial year's October-December and January-March quarters, nor have they received the first instalment for the current financial year's April-June quarter.
- Status of State Participation in PM-SHRI:**
 - Five states have not signed the Memorandum of Understanding (MoU) for the PM-SHRI scheme:** Tamil Nadu, Kerala, Delhi, Punjab, and West Bengal.
 - Tamil Nadu and Kerala have indicated willingness to participate.**
 - Delhi, Punjab, and West Bengal have refused,** leading to a halt in SSA funds.

Reasons for Refusal:

- Delhi and Punjab:** Both states, governed by the Aam Aadmi Party, have their own schemes for exemplary schools known as **"Schools of Eminence."** They declined participation in PM-SHRI.
- West Bengal:** The state objected to the prefixing of **"PM-SHRI"** to the names of their schools, particularly since states bear 40% of the cost under the scheme.

Impact of discontinued fund:

- Financial Strain:** The halt in SSA funds has led to a financial crunch in the affected states, **impacting salaries for teachers and staff, and hindering basic activities in schools.**
- They argue that the focus should be on creating new schools rather than merely revamping existing ones with the PM-SHRI label.**

MISCELLANEOUS

International Yoga Day

News Excerpt:

The **International Day of Yoga (IDY)** is celebrated annually on June 21 to create awareness about its vast potential in improving overall health and well-being.

More About the News:

- This year, people all across the globe celebrated **the 10th anniversary of the International Yoga Day.**
- Prime Minister Narendra Modi performed yoga in **Srinagar, Jammu and Kashmir.**
- Since the inception of the International Day of Yoga in 2014, the prime minister has led celebrations at various iconic sites, including Kartavya Path in Delhi, Chandigarh, Dehradun, Ranchi, Lucknow, Mysuru, and even the **United Nations Headquarters in New York.**



Ministry of Education
Government of India

75
Azadi Ka
Amrit Mahotsav

PM SHRI
PM Schools for Rising India

Transforming education with a commitment to *Quality Assurance*

Major Pillars

- Curriculum, Pedagogy & Assessment
- Infrastructure – Adequacy, Functionality, Aesthetics and Safety
- Human Resources & Inclusive Practices
- Management & Governance
- Leadership
- Beneficiary Satisfaction

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2024 Theme: Yoga for self and society

- This year marks the **10th International Day of Yoga** with the theme "**Yoga for Self and Society.**"
- Yoga, a **transformative practice**, represents the harmony of mind and body, the balance between thought and action, and the unity of restraint and fulfilment.
- It **integrates the body, mind, spirit, and soul**, offering a holistic approach to health and well-being that brings peace to our hectic lives.

History of International Yoga Day

- PM Modi proposed the idea of a global day **dedicated to yoga during his 2014 address to the 69th session of the United National General Assembly (UNGA)**. In December 2014, the UNGA passed a resolution declaring **June 21 as 'International Yoga Day'**.
- The **United Nations** describes **yoga as an ancient practice with physical, mental, and spiritual elements, originating in India.**

World Zoonoses Day

News Excerpt:

The **Department of Animal Husbandry and Dairying** has organized an interactive session on **World Zoonoses Day**.

About Zoonoses

- Zoonoses are infectious diseases that can **transfer between animals and humans**, such as rabies, anthrax, influenza (**H1N1 and H5N1**), Nipah, COVID-19, brucellosis, and tuberculosis.
- These diseases are caused by various pathogens, including bacteria, viruses, parasites, and fungi.

World Zoonoses Day:

- It is celebrated in **honour of Louis Pasteur**, who administered the **first successful rabies vaccine**, a zoonotic disease, on July 6, **1885**.



- This day is dedicated to raising **awareness** about zoonoses and **promoting preventive and control measures**.

Non-Zoonotic Diseases and India's Livestock Population

- However, not all animal diseases are zoonotic. Many diseases affect livestock without posing a risk to human health.

- These **non-zoonotic diseases are species-specific** and cannot infect humans. Examples include Foot & Mouth Disease, PPR, Lumpy Skin Disease, Classical Swine Fever, and Ranikhet Disease.
- Understanding which diseases are zoonotic is crucial for effective public health strategies and preventing unnecessary fear and stigmatization of animals.
 - India boasts the **largest livestock population**, with 536 million livestock and 851 million poultry, accounting for approximately **11% and 18% of the global livestock and poultry population, respectively.**
 - Additionally, **India is the largest producer of milk** and the **second-largest producer of eggs globally.**

Government Initiatives

- A committee has been established, comprising experts from the Ministry of Health and Family Welfare, ICMR, Department of Animal Husbandry & Dairying, ICAR, and **Ministry of Environment Forest and Climate Change**.
 - This team has been actively involved in collaborative outbreak investigations of **Highly Pathogenic Avian Influenza (HPAI)**.
- The **Department of Animal Husbandry & Dairying (DAHD)** has launched a nationwide campaign for Brucella vaccination of bovine calves under **NADCP (National Animal Disease Control Programme)** and undertaken Rabies Vaccination under **ASCAD (Assistance to States for Control of Animal Diseases)**.
- The department is also implementing a comprehensive nationwide surveillance plan for economically important animal diseases.

Way Forward

- Prevention and control of **zoonotic diseases** rely on vaccination, good hygiene, animal husbandry practices, and vector control.
- Collaborative efforts through the **One Health approach**, which emphasizes the interconnectedness of human, animal, and environmental health, are crucial.
- Collaboration among veterinarians, medical professionals, and environmental scientists is essential for addressing zoonotic diseases comprehensively.
- **Raising awareness aids** in early detection, prevention, and control, ultimately protecting public health.
- Educating the public about the distinction between zoonotic and **non-zoonotic diseases** helps reduce unwarranted fear and promotes a more informed approach to animal health and safety.

Project 2025

News Excerpt:

The **Project 2025** document has sparked significant **controversy**, with many associating it with former **US President Donald Trump's** potential plans if he wins the upcoming **presidential election** in November.

What is so controversial?

- It is prepared by various **right-wing groups**; the document covers issues such as **abortion, climate change, and a reformed federal workforce**.
- **Donald Trump** distanced himself from the document, stating his **disagreement with many of its points**.

About the Project 2025:

- The over 900-page document, prepared by the **Heritage Foundation** with contributions from **multiple right-wing organizations**, addresses issues such as **abortion, LGBTQ rights, and immigration**.
- The document aims **to reverse the FDA approval of the abortion drug mifepristone and ban its distribution**.
- The document also seeks **to restrict LGBTQ rights** and proposes using the US Military and National Guard to round up millions of **undocumented immigrants**, denying them state protection.
- The document proposes replacing thousands of **federal employees with Trump loyalists**, which could impact efficiency and productivity at the federal level.
- It also suggests a significant **expansion of presidential powers**, an area where Trump faced challenges during his first term due to opposition from Congress members and state governors.

Related:**The Roe vs. Wade case**

- The Roe vs. Wade case previously **recognized abortion as a right in the USA**.

This decision was **recently overturned by the court**, resulting in abortion no longer being a legal right in many US states.

Blue Planet Prize**News Excerpt:**

The **Asahi Glass Foundation** in **Japan** has announced that the **Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)** is one of the two recipients of the **2024 Blue Planet Prize**.

About IPBES:

- The **Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)** is an independent **intergovernmental body** established by states to strengthen the science-policy interface for **biodiversity and ecosystem services**.
- IPBES was established in **Panama City** on April 21, 2012, by **94 governments** and now includes over **145 member states**, with **India** being a **founding member**.
- Its mission is to promote the **conservation and sustainable use of biodiversity**,

ensure long-term human well-being, and support sustainable development.

- Although not a United Nations body, the **United Nations Environment Programme (UNEP)** provides **secretariat services to IPBES**.
- The **IPBES Secretariat** is located in **Bonn, Germany**, and the IPBES Plenary, the governing body composed of representatives from member states, meets annually.

About Robert Costanza:

- The other laureate is **Robert Costanza** from the **Institute for Global Prosperity**, University College London, recognized for his foundational contributions to **ecological economics**.
- In a groundbreaking 1997 paper, Costanza and colleagues highlighted that the **ecosystem services** provided by nature far exceed the **economic value of the world's GDP** at the time, bringing significant attention to the importance of ecosystem services.
- As a co-founder of **ecological economics**, Costanza advocates for an ecologically sustainable society that promotes well-being.

About the Blue Planet Prize:

- **Established in 1992**, the year of the **Earth Summit**, the **Blue Planet Prize** by the **Asahi Glass Foundation** is one of the top **global sustainability awards**.
- It recognizes outstanding achievements in **scientific research and its application** to address **global environmental problems**.
- The prize aims to encourage efforts to heal the **Earth's fragile environment**.
- Named after **Russian cosmonaut Yuri Gagarin's** remark, "**The Earth is blue**," the prize solicits nominations worldwide between August and October, with **two recipients typically chosen each year**.
- Each recipient receives a **certificate of merit**, a **commemorative trophy**, and **\$500,000 in prize money**.

**Professor Robert Costanza****Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)**

PHILOSOPHY OF THE MONTH

National symbols, National respect

This month, as we reflect on the **complex interplay between patriotism, national symbols, and individual freedoms**, it becomes evident that the heart of a democratic society lies in the delicate balance between fostering national pride and respecting personal liberties. The recent discussions in the media on the regulation of citizens' behaviour concerning national symbols in India have brought this philosophical debate to the forefront.

The Nature of Patriotism

In its purest form, **Patriotism is a voluntary and heartfelt love for one's country**. It stems from a deep-seated sense of belonging and commitment to the nation's and its people's welfare. **Genuine patriotism cannot be mandated**; it flourishes when citizens feel a genuine connection to their country, its values, and its ideals.

The Role of National Symbols

National symbols like the **flag, anthem, and emblem are powerful representations of a country's identity and heritage**. They serve as focal points for **collective pride and unity**. Respect for these symbols should come from **mutual respect and affection, not from forced compliance**.

Compulsory singing of the **national anthem** or standing during its play raises critical questions about the nature of freedom in a democracy.

Compulsory acts, while intended to promote unity and patriotism, can **paradoxically lead to resentment and a superficial display of respect** devoid of genuine sentiment.

Legal and Social Context

Legal rulings in India have oscillated between upholding mandatory displays of respect for national symbols and recognizing individual rights to abstain based on personal beliefs. The **Supreme Court's exemption of Jehovah's Witnesses from singing the national anthem** underscores the fundamental right to freedom of conscience, enshrined in **Article 25 of the Indian Constitution**.

True civic responsibility is an **internalized value**, not a product of **external compulsion**. The **Prevention of**



Insults to National Honour Act, 1971, protects national symbols from desecration but should not be used to coerce **outward displays of patriotism**.

Freedom of Conscience

The essence of democracy is the freedom of conscience. **Citizens must have the right to decide how they wish to express their patriotism**. It is essential to recognize that a lack of outward demonstration of respect does not equate to disloyalty or lack of patriotism.

Thus, by fostering an environment where **genuine respect for the nation can flourish**, we can build a **free and democratic society** that values both national pride and individual rights.

THEMATIC ESSAYS

1. If everyone is thinking alike then no one is thinking.
2. You are the artist of your own life, Don't hand the Paintbrush to anyone else.

CONTEMPORARY ETHICS CASE STUDY

A migrant labourer and his wife killed their three daughters as they could not raise them because of poverty in a metropolitan city. They confessed their crime hours after the bodies of three sisters were found inside a trunk in their house in XYZ village. During questioning, the couple confessed that they poisoned them as they could not bring them up because of poverty and concocted the story of girls going missing after killing them, police said. The husband-wife duo also told police they could care for only two children. The incident highlights the dire circumstances that some families face due to poverty, which can lead to desperate actions like Killing one's own children. However, it is also a reminder of the importance of social support systems, programs to assist families facing financial hardship and the role of society at large. Poverty can be a significant stressor on families, and access to resources and assistance can make a critical difference in preventing such tragic outcomes.



In your opinion,

- (a) What ethical issues arose in the current case?
- (b) How do you see the role of society and the state in it?
- (c) What assistance can civil society render to mitigate the suffering of migrants in similar situations?

(Answer in 250 words) 20



SPECIES

SPECIES	ABOUT
<p>Castor Plant</p> <p>News Excerpt: The Ministry of Textiles is set to launch a pilot project in Bhagalpur, Bihar to explore the use of castor plants as an alternative to traditional mulberry silk production.</p> <ul style="list-style-type: none"> < The plan involves growing the insect <i>Samia Ricini</i> on castor leaves. 	<p>More About News</p> <ul style="list-style-type: none"> < Silkworms typically feed on mulberry leaves, but the ministry hopes to shift them to castor leaves, which have medicinal properties. < The aim is to boost silk production and create more employment opportunities. <p>Castor Plant</p> <ul style="list-style-type: none"> < The castor-oil plant (<i>Ricinus communis</i>) is a member of the spurge family (Euphorbiaceae) cultivated for its oil. < Its oil has pharmaceutical and industrial applications, as well as for landscaping purposes. < Likely originating from tropical Africa, it is now widespread in warm regions globally. < The seeds, rich in oil, contain ricin, a highly toxic substance that can be fatal if ingested. <p>Significance of Pilot Project</p> <ul style="list-style-type: none"> < Diversifying silk production to include eri silk could reduce dependence on mulberry silk and offer additional economic benefits to farmers due to the multiple uses of castor plants. <p>Silk Production in India</p> <ul style="list-style-type: none"> < India is the world's second-largest silk producer, with the sericulture industry employing around 9.2 million people in rural and semi-urban areas. < India's silk imports have consistently exceeded exports, driven by high demand for high-quality silk products that domestic production cannot meet.
<p>Senna spectabilis</p> <p>News Excerpt: The Kerala Forest Department has decided to remove invasive plants like <i>Senna spectabilis</i>, which have posed a major threat to wildlife habitat in the Nilgiri biosphere.</p> 	<p>More about the news:</p> <ul style="list-style-type: none"> < The department is gearing up to remove exotic species following a favorable court order issued by the Chennai High Court last year. According to it, if a plant has been declared as a weed it can be extracted even from protected areas. < The Mudumalai and the Sathyamangalam tiger reserves in Tamil Nadu began extracting the senna tree after convincing the gravity of the situation to the Court and obtaining the order. <p>About Senna Spectabilis:</p> <ul style="list-style-type: none"> < It is a tree with a very dense, spreading crown; which can grow 7 - 18 metres tall. <p>Uses:</p> <ul style="list-style-type: none"> < The tree is harvested from the wild for local use as a medicine and source of wood. < It can be grown as a hedge and, because it produces an abundance of bloom over a long flowering period, it is often grown as an ornamental in gardens, parks, along streets and also to provide shade. <p>The reason behind its eradication:</p> <ul style="list-style-type: none"> < As an invasive species, its dense foliage suppresses the growth of native trees and grasses, posing a significant threat to biodiversity. < The income from the project would be utilized for eco-restoration.
<p>Elm Trees</p> <p>News Excerpt: Elm trees have been dying in the UK since the 1960s, but they might be making a comeback.</p>	<p>Elm Tree</p> <ul style="list-style-type: none"> < Elm, (genus Ulmus), genus of about 35 species of forest and ornamental shade trees of the family Ulmaceae, native primarily to north temperate areas. < Many are cultivated for their height and attractive foliage. < Elm wood is used in constructing boats and farm buildings because it is durable underwater; it is also used for furniture. <p>More About News</p> <ul style="list-style-type: none"> < Elm trees used to be everywhere in the UK countryside. The trouble started with Dutch elm disease.



< This **fungal disease**, spread by the **elm bark beetle**, arrived in the UK in the early 20th century.

Dutch elm disease:

- < It is spread by **beetles who bore through elm bark**. The elm bark beetle carries a **fungus from tree to tree**. The damage causes dark streaks to appear on the bark.
- < Dutch elm disease (DED) causes wilt and death in all elm species native to Minnesota.
- < Fungicide injections can protect elm trees from infection by bark beetles.
- < If caught early, DED infections can be pruned out and fungicides can protect the tree.

Spade-toothed Whales

News Excerpt:

World's rarest whale may have washed up on New Zealand beach, possibly shedding clues on the rare species.

More about the Spade-toothed Whales:

- The spade-toothed whales are the world's rarest, with **no live sightings** ever recorded.
- They are one of the **most poorly known large mammalian species of modern times**. Since the 1800s, only 6 samples have ever been documented worldwide, and all but one of these was from New Zealand.
- Nothing is known about the **biology, behavior or diet** of these marine animals.



Significance of the discovery:

- **The spade-toothed whale found in New Zealand will be the first to be dissected.**
- < It will allow the scientists to map the relationship of the whale to the few others of the species found, learn what it eats, and perhaps lead to clues about where they live.

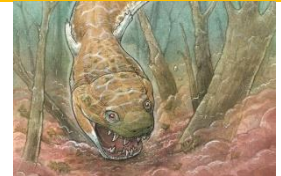
Gaiaasia Jennyae

News Excerpt:

A fossil found in the Namib desert has been described as a 2.5-metre-long predator that resembled a giant salamander.

About Gaiaasia Jennyae:

- Named Gaiaasia jennyae, this salamander-like **tetrapod** (four-legged vertebrate) inhabited what is now **Namibia**.
- The creature lived about **280 million years ago** during the **early Permian period**, approximately 40 million years before the first dinosaurs.
- **Gaiaasia** lived **much further south** than its close relatives in present-day North America and Europe.
- This suggests that **early tetrapods** were **more widespread** and **adaptable** to different climates than previously thought.



Gaiaasia jennyae was considered an "**archaic**" species even in its time, surviving about **40 million years** after most of its relatives had died out at the **end of an ice age**, during a period when new animal lineages were emerging.

Xenophrys apatani

News Excerpt:

A forest-dwelling horned frog from Northeast India has been described as a distinct species named Xenophrys apatani

- The frog was named after the Apatani community of the region in recognition of their ingenuity in the conservation of wild flora and fauna.

Habitat and Distribution:

- First, reported from **Arunachal Pradesh in 2019**, it was confused with the Maoson horned frog of Vietnam.
- It is endemic to **Arunachal Pradesh**.
- It is currently found in the **Tale Wildlife Sanctuary** which is part of the Eastern Himalayas and Indo-Burma biodiversity hotspots.



Conservation Status:

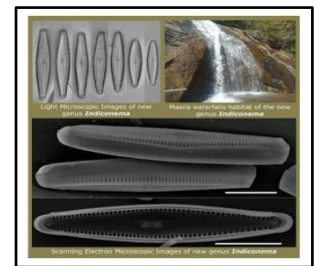
- Currently considered safe due to its location within a protected area.
- Further research is needed to understand its population size and specific habitat requirements

Apatani tribe

- The Apatani tribe, residing in **India's Ziro Valley**, stands out for their harmonious relationship with nature. Their way of life exemplifies sustainable practices.
- Apatani agriculture thrives without machinery or animals. **Their wet rice cultivation systems and social forestry methods are extensive and highly productive.**
 - This dedication to ecological balance has earned them a **UNESCO World Heritage nomination**, recognizing the valley's "extremely high productivity" and unique conservation methods.
- **Their society is patrilineal**, tracing descent through the father's line.

Traditional village councils, called bulyañ, play a vital role in maintaining social order.

<p>Caecilian</p> <p>News Excerpt:</p> <p>A limbless amphibian has been added to the fauna in the Kaziranga National Park and Tiger Reserve.</p> <ul style="list-style-type: none"> A team of herpetologists recorded the striped caecilian (<i>Ichthyophis</i> spp) in the tiger reserve for the first time during a rapid herpetofauna survey. 	<p>About Caecilian</p> <ul style="list-style-type: none"> Caecilians are elongated, segmented amphibians without limbs, classified in the order Gymnophiona or Apoda. They are grouped with frogs and salamanders. Resembling earthworms or snakes due to their lack of limbs, caecilians are named for their tendency to have small or no eyes under their skin. There are approximately 200 known species of caecilians. They predominantly inhabit moist tropical and subtropical regions of South and Central America, South and Southeast Asia, and Sub-Saharan Africa. They are not dangerous to humans and eat earthworms and insects. Reproduction varies; some lay eggs, while others give birth to live young, with unique maternal care behaviors like skin-feeding and matriphagy. As they are ancient species, their presence holds critical linkages to evolution and intercontinental speciation. <p>Herpetofauna</p> <ul style="list-style-type: none"> Herpetofauna, comprising reptiles and amphibians, are among the least researched yet highly susceptible to climate change. They serve as environmental indicators and play a critical role in pest management.
<p>Indiconema</p> <p>News Excerpt:</p> <p>Researchers from the Agharkar Research Institute (ARI) in Pune have identified a new genus of diatoms in the waters of the Eastern Ghat mountain range.</p>	<p>Indiconema:</p> <ul style="list-style-type: none"> The genus has been named "Indiconema" due to its limited distribution within the country. One species of Indiconema has been discovered in the Eastern Ghats and another in the Western Ghats The findings indicate that Indiconema is closely related to Afrocymbella, a genus endemic to East Africa, further emphasizing the biogeographical connections between India and the African continent. <p>Diatoms:</p> <ul style="list-style-type: none"> Diatoms are microscopic algae that play a crucial role in our everyday lives by producing about 25 percent of the global oxygen supply. They form the base of the aquatic food chain and are valuable indicators of water quality due to their sensitivity to changes in water chemistry. India is home to a rich diversity of diatoms.
<p>Jumping Terrestrial Leech</p> <p>News Excerpt:</p> <p>A groundbreaking study has provided the first conclusive evidence that at least one species of terrestrial leech can jump, which was documented in a study published in the journal Biotropica.</p>	<p>Significance of the Findings</p> <ul style="list-style-type: none"> The jumping leech, identified as <i>Chtonobdella fallax</i>, is a common species in Madagascar. Understanding the behavior of leeches is crucial for conservation efforts. Leeches and more specifically, their blood meals are increasingly used to survey vertebrate biodiversity. The discovery of their ability to jump adds a new dimension to our understanding of these creatures and their ecological roles. This study not only resolves a long-standing debate but also highlights the importance of continuous exploration and documentation of wildlife behavior. The newfound ability of terrestrial leeches to jump could lead to further insights into their biology and interactions with their environment.
<p>Mainland Serow</p>	<p>About Mainland Serow:</p>



News Excerpt:

The mainland serow (*Capricornis sumatraensis* thar), a mammal that resembles a cross between a goat and an antelope, has been recorded at the lowest elevation in Assam, ever beyond its natural home in Bhutan.



- **Brian Houghton Hodgson** originally named the goat-like "**Bubaline Antelope**" that he saw in montane areas between the **Sutlej and Teesta Rivers** in **1831** with short annulated horns.
- It is a mammal that appears somewhere between a goat and an antelope and bears the scientific name of **Capricornis sumatraensis**

Habitat:

- The Himalayan serow resides in mountainous forests typically **above 300 meters** (980 feet) but may descend to 100 meters (330 feet) during winter.

Conservation:

Hunted for meat and body parts used in local medicine. The mainland serow is protected under **CITES Appendix I**.

IUCN Red List: Vulnerable.

There are four additional species of serow:

- **Japanese Serow (*C. crispus*)**
- **Formosan Serow (*C. swinhoei*)**
- **Burmese Red Serow (*C. rubidus*)**
- **Thar, or Himalayan Serow (*C. thar*)** (sometimes considered a subspecies of the mainland serow)

PROTECTED AREAS

Bannerghatta Biological Park

News Excerpt:

India's largest leopard safari opens at Bannerghatta.

About the Safari:

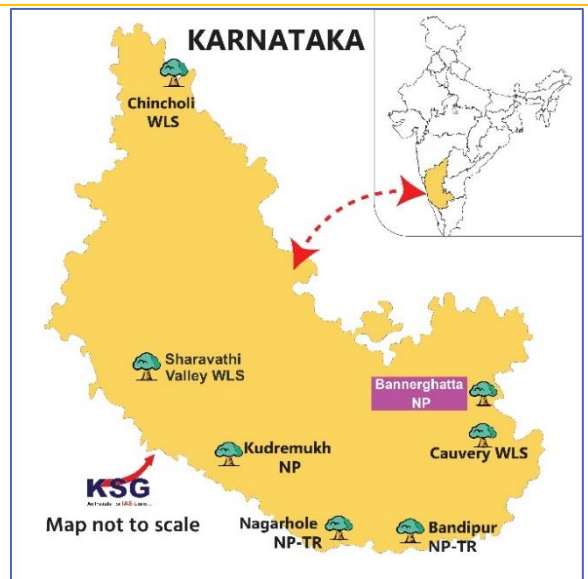
- It is South India's first and the **country's largest leopard safari** created worth **Rs. 4.5 crore**.
- It was inaugurated by the environment minister at **the Bannerghatta Biological Park (BBP)**.
- According to BBP officials, Bannerghatta is **home to a good population of free-ranging leopards (*Panthera pardus*)**.

Area:

- As per Central Zoo Authority guidelines for safaris, **an area of 20 hectares has been demarcated and fenced for the safari**.
- The leopard safari area is made up of undulating terrain with natural rocky outcrops and semi-deciduous forest.
- This whole area is covered with a vertical chain-link mesh which is 4.5 meters high, and MS sheets have been placed at a 30° inclined angle of 1.5 metres.
- Four acres within the safari area have been separated, using a solar fence, to help the animals acclimatize to their new environment.

Other animals:

- The minister named a jumbo calf that was born on Jan 26 as '**Swaraj**'. Currently, BBP has 26 captive elephants, the highest number for any zoo in India.
- He set free six hamadryas baboons for public display.



Tale Wildlife Sanctuary

News Excerpt:

New frog species discovered in Tale Wildlife Sanctuary.

Location: Situated in **Arunachal Pradesh**, 10 km northeast of Hapoli town, Tale Wildlife Sanctuary encompasses 337 sq. km area. It was **established in 1995**.

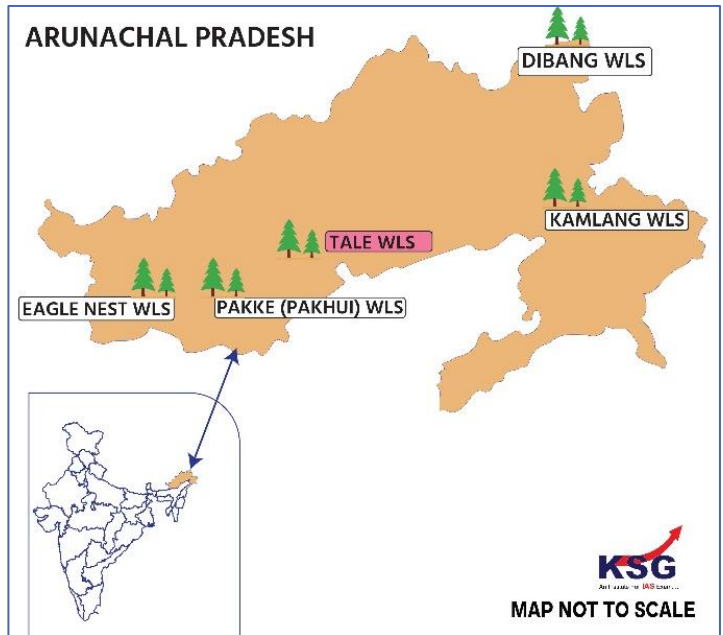
Geography: Dramatic landscapes define the sanctuary. Densely forested mountains ranging from 2,000 to 4,000 meters surround the area, **with the Subansiri, Sipu, and Pange rivers carving their paths through the valleys**. This untouched wilderness boasts pristine climax vegetation, a haven for rare animals.

Wildlife: Tale Sanctuary is a paradise for wildlife enthusiasts.

Predators: **Clouded leopard, leopard, jungle cat**

Mammals: **Indian elephant, wild boar, gaur, wild buffalo**

Other notable creatures: **Himalayan black bear, flying squirrel, giant squirrel, Indian pangolin, slow loris, palm civet.**



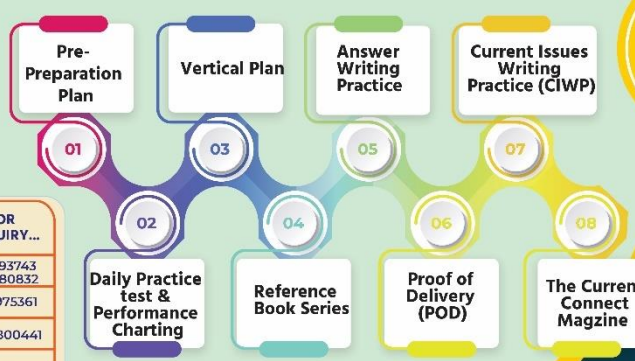
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MAP CONNECT: WORLD

CHAGOS | DIEGO GARCIA
India has backed Mauritius' efforts to reclaim the Chagos Archipelago. They are part of the UK's British Indian Ocean Territory. Diego Garcia was leased to the US in the 1960s.

SAIPAN ISLAND
WikiLeaks' Julian Assange pleads guilty. The capital of the Northern Mariana Islands (USA) was chosen for his hearing due to its proximity to Assange's native Australia.

LIZARD ISLAND
97% of corals at this Australian island was wiped out in 3 months in a catastrophic bleaching event.

RAS MADRAKAH PENINSULA
A 16-member crew of the Comoros-flagged oil tanker, "Prestige Falcon" capsized off the coast of Oman.

WEDA BAY
Deforestation at one of the Indonesia's largest nickel processing hubs is threatening an Indigenous group among the country's last uncontacted tribes.

CRETE ISLAND
Located on Papouira Hill, a 4,000-year-old Minoan stone monument was discovered in Greece's Crete.

CONKOUATI-DOULI N.P.
Conservation groups are protesting the issuance of an oil and gas exploration permit for the Republic of Congo National Park to a Chinese fossil fuel company.

LAKE NATRON
A Ramsar site on the Tanzania-Kenya border, has warm waters and deposits of salt & caustic soda creating ideal conditions for flamingos. However, they are now declining due to climate change.

MUZO
This Columbian town, the emerald capital of the world, allows its miners - known as "guaqueros" to search through the detritus few times a month and take home any precious stones found.

BOLIVIA
It announced the discovery of a 1.7 trillion cubic foot natural gas reserve near its city of La Paz.

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MAP NOT TO SCALE

SNAPSHOTS: THEMES OF THE MONTH

Note: These themes are inspired from the monthly magazines of Yojana, Kurukshetra, Down to Earth and Economic & Political Weekly with added inputs.

YOJANA: Food Processing

Impact of food processing on employment generation and skill development

To propel India towards becoming a developed nation within the next 25 years during the Amrit Kaal era, a pivotal transformation of its primary sector, agriculture, is imperative. The focus must shift from traditional agriculture to agribusiness, addressing employment dependence on agriculture through robust skill development and absorption into emerging agribusiness ventures. Central to this transformation is the food processing sub-sector, poised to significantly elevate agricultural output through enhanced processing capabilities.

- The food processing sector in India has experienced substantial growth, expanding at an average annual rate of 8.38% over the last five years leading up to 2020-21, surpassing the 4.87% growth rate seen in the agriculture and allied sectors (2011-12 prices). This sector has emerged as a significant contributor to India's economy, making notable contributions to GDP, employment, and investment.
- In 2020-21, the food processing sector accounted for 10.54% and 11.57% of Gross Value Added (GVA) in the manufacturing and agriculture sectors, respectively. Despite the rising demand for processed and ready-to-eat foods in India, its overall share of GVA stood at 1.88%, compared to manufacturing at 17.86% and agriculture at 16.26%.
- Regarding employment, the registered food processing sector employed 20.32 lakh individuals as per the latest Annual Survey of Industries (2019-20). Additionally, the unregistered sector provided employment for 51.11 lakh workers, constituting 14.18% of the unregistered manufacturing sector's workforce (NSSO 73rd Round, 2015-16).
- The Ministry of Food Processing Industries has implemented the Pradhan Mantri Kisan Sampada Yojana (PMKSY), aimed at developing modern infrastructure and efficient supply chain management from farm to retail. This initiative has led to increased employment opportunities, reduced agricultural waste, higher processing levels, and enhanced exports of processed foods. Evaluation studies of PMKSY components, such as the Integrated Cold Chain and Value Addition Infrastructure Scheme, indicate significant creation of direct and indirect employment opportunities, with

about 9.69 lakh jobs generated through completed projects.

- Under the Atmanirbhar Abhiyaan, the Ministry launched the Pradhan Mantri Formalization of Micro Food Processing Enterprises (PMFME) scheme in June 2020. This scheme, with a total outlay of 10,000 crore until 2025, aims to boost competitiveness among micro-enterprises in the unorganized food processing sector and promote sector formalization. It targets supporting 2 lakh enterprises through credit-linked subsidies, adopting the 'One District One Product' approach. To date, the scheme has sanctioned 65,094 loans and disbursed Rs 771 crore as seed capital assistance, benefiting 2.3 lakh members of Self-Help Groups (SHGs) and other entities.

Addressing the challenge of skilled manpower, the Ministry collaborates closely with entities like the Food Industry Capacity and Skill Initiative (FICSI), the Sector Skill Council (SSC), and the National Institute of Food Technology Entrepreneurship and Management (NIFTEM). These efforts aim to meet the projected demand for skilled personnel across major food processing subsectors. Initiatives include validating Qualification Packs (QPs) for job roles and developing course curricula through NIFTEM.

Role of NABARD: NABARD plays a pivotal role in the food processing sector by spearheading infrastructure development crucial for industry growth. It manages two significant funds: the Food Processing Fund (FPF) and the Warehouse Infrastructure Fund (WIF), both established by the Government of India to support specific sectoral needs.

- **Food Processing Fund (FPF):** Initiated in 2014-15 with a corpus of 2,000 crore, the FPF aims to provide accessible credit to public and private entities for establishing Designated Food Parks (DFPs) and food processing units within them. As of March 31, 2024, NABARD has sanctioned term loans totaling 1,191.57 crore for various projects, including 14 Mega Food Parks (MFPs), 03 Industrial Parks, 09 Agro Processing Clusters (APCs), and 15 Individual Food Processing Units. Cumulative disbursements under this fund amount to ₹768.77 crore.
- **Expected Capacity Creation:** These projects are set to develop approximately 1370.03 acres across 14 Mega Food Parks, 03 Industrial Parks, and 09 Agro Processing Clusters, which act as Central Processing Centres (CPCs). Each Mega Food Park will be supported by 45 Primary Processing Centres (PPCs) and numerous Collection Centres (CCs), strategically located to facilitate direct procurement of agricultural produce from farmers. This infrastructure aims to enhance core processing capabilities significantly (Fig. 1).

- Milestone Achievements:** Term loans from the FPF have been extended to a wide spectrum of activities and entities, including State Governments, State-owned entities, Special Purpose Vehicles (SPVs), companies, partnerships, and limited liability partnerships. The introduction of the Production Linked Incentive (PLI) scheme for the food processing sector by the Government of India further encourages investment. This scheme is expected to foster substantial investment opportunities, especially benefiting food processing units established within Designated Food Parks (DFPs).
- Warehouse Infrastructure Fund (WIF):** Established in 2013-14 with an initial corpus of 5,000 crore, later augmented to 10,000 crore in 2014-15, the WIF supports the creation of scientific storage infrastructure for food grains and perishable goods. It finances State governments, State-owned agencies, and private sector entities for establishing dry warehouses, cold storage facilities, and cold chain infrastructure. As of March 31, 2024, the corpus of the WIF has been fully committed, with 8,161 projects sanctioned nationwide, creating storage capacity totaling 13.74 million metric tonnes (MT). Operationalized capacity stands at 9.96 million MT, encompassing a variety of storage structures from small-scale 100 MT farm gate warehouses to large-scale 50,000 MT silos for bulk storage.
- Future Outlook:** The food processing sector in India has witnessed significant growth, with Gross Value Added (GVA) rising from ₹1.34 lakh crore in 2014-15 to 2.08 lakh crore in 2021-22. However, its current contribution to total GVA remains modest at around 1.8%. To achieve the vision of quadrupling this contribution to 7.2% by 2047, strategic measures are necessary. These include enhancing global competitiveness in processed food exports, focusing on key value chains such as fruits and vegetables, fish and seafood, meat, dairy products, poultry, and eggs. Additionally, there is a critical need to bridge skill gaps within the workforce to sustain sectoral growth and meet future demands effectively.

India's Food Regulatory Landscape

National food control systems are essential for ensuring the safety of food for human consumption, with each country developing its own system to meet specific needs and priorities. These systems focus on both domestic and international trade, with core objectives similar globally. The Food and Agriculture Organization (FAO) outlines the primary objectives of these systems as:

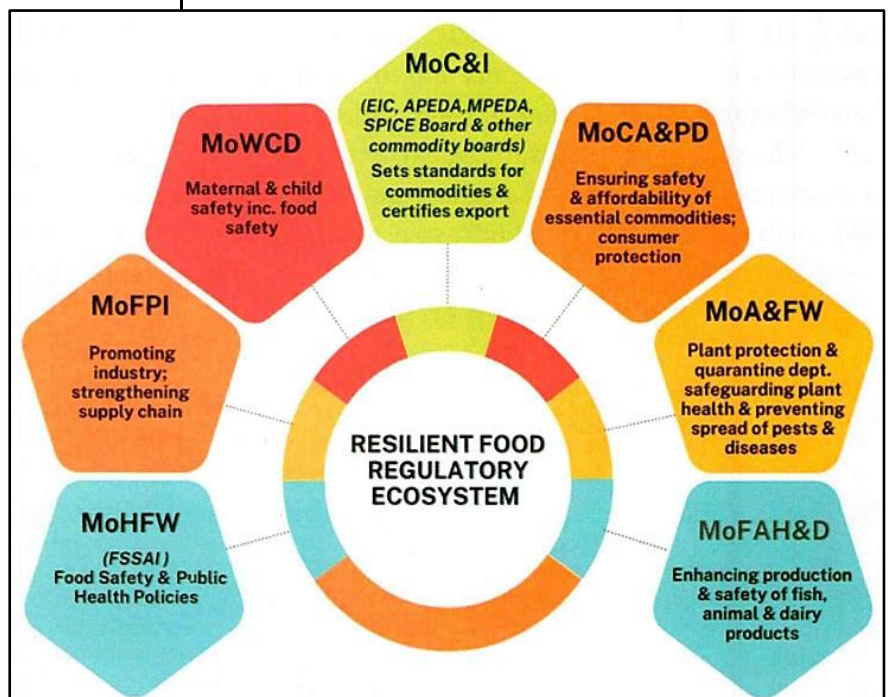
- Protecting public health by reducing the risk of food-borne illness.

- Protecting consumers from unsanitary, unwholesome, mislabeled, or adulterated food.
- Contributing to economic development by maintaining consumer confidence in the food system and providing a sound regulatory foundation for trade.

India's National Food Control System

India's approach to food safety involves multiple ministries and departments, such as the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture & Farmers Welfare, Ministry of Food Processing Industries (MoFPI), and others. The Food Safety and Standards Authority of India (FSSAI), established in 2006, plays a central role in setting and enforcing food safety standards. FSSAI's mandates include:

- Setting science-based standards for food products.
- Regulating the manufacturing, storage, distribution, and import of food products.
- Promoting self-compliance among food businesses.
- Harmonizing Indian standards with global benchmarks.
- Standard Setting and Harmonization: FSSAI's development of food standards involves scientific panels and committees that ensure alignment with international guidelines like those from the Codex Alimentarius Commission. The process includes:**
 - Formulating science-based standards.
 - Risk assessment and developing draft standards.
 - Endorsement and approval by the Scientific Committee and Food Authority.



- Public notification and stakeholder engagement.
- Finalizing and implementing standards.

- **Enforcement and Compliance:** Effective enforcement of food safety standards is achieved through a combination of traditional inspections, innovative self-compliance initiatives, and third-party audits. The Food Safety Compliance System (FoSCoS) integrates online licensing, registration, and monitoring of food business operators (FBOs), promoting ease of doing business and comprehensive profiling.
- **Capacity Building and Self-Compliance:** FSSAI promotes a culture of self-compliance through programs like the Food Safety Training and Certification (FoSTaC) and third-party auditing agencies. The Hygiene Rating Scheme encourages food businesses to improve their hygiene and safety levels, supporting informed consumer choices.
- **Food Testing Ecosystem:** A robust food testing ecosystem is vital for compliance and risk identification. FSSAI has established a network of primary laboratories, referral laboratories, and National Reference Laboratories (NRLs) for food analysis and surveillance. Initiatives like Food Safety on Wheels (FSW) and Rapid Analytic Food Testing (RAFT) kits enable on-site testing and extend food safety monitoring to remote areas.
- **Collaborative Approach:** FSSAI engages stakeholders through initiatives like the Network of Professionals in Food and Nutrition (NetProFaN) and the Network for Scientific Cooperation for Food Safety and Applied Nutrition (NetSCoFAN), fostering collaboration and capacity building.

Role of Autonomous Organizations in Export Trade

Several organizations play key roles in regulating and promoting the export of food products in India, including:

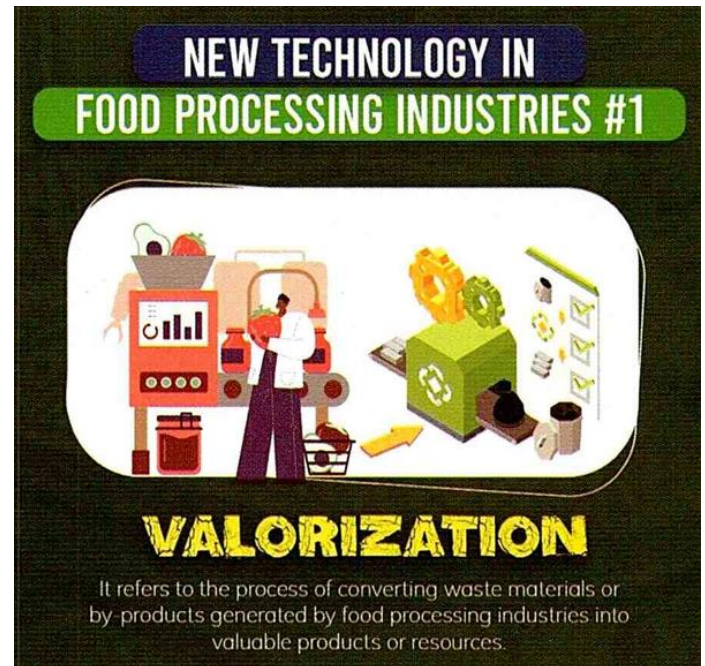
- Export Inspection Council (EIC) for export certification.
- Agricultural and Processed Food Products Export Development Authority (APEDA) for promoting exports of scheduled products.
- Marine Products Export Development Authority (MPEDA) for marine products.
- Various commodity-specific boards like Tea Board, Coffee Board, Spices Board, and others ensure the quality and certification of exports.

Conclusion: India's national food control system embodies a 'Whole of Government' approach, ensuring transparency, predictability, and a risk-based regulatory framework. Continuous efforts and innovative strategies by FSSAI and other stakeholders aim to align India's food safety system with global standards, ensuring safer and healthier food for consumers.

Processed Foods

In today's fast-paced world, the concept of well-being and health has taken center stage, emphasizing the importance of a balanced diet, regular exercise, and proper sleep. As

processed foods became the convenient choice for many, recent years have seen a notable shift towards healthier food options. This change in consumer behavior underscores the growing recognition of the relationship between diet and overall health, encompassing physical,



mental, and emotional well-being.

- **Shift Towards Healthy Eating:** One impressive quote that encapsulates this shift is, "The journey to wellness starts with a single bite of intention." This awareness drives individuals to choose foods that nourish their bodies, impacting not only their physical health but also their energy levels and mood.
- **NAFED Initiative:** The National Agricultural Cooperative Marketing Federation of India (NAFED) has embraced this shift by promoting healthy eating through initiatives like Millets, Bharat Atta, Bharat Dal, and Bharat Chawal. These initiatives reflect NAFED's commitment to providing nutritious and affordable food options while supporting sustainable agriculture.
- **Millets Initiative:** Millets, for instance, are highly nutritious grains rich in protein, fiber, and essential vitamins and minerals. They are particularly beneficial for individuals with diabetes due to their low glycemic index and are gluten-free, making them suitable for those with celiac disease or gluten sensitivities. Millets also support heart health, aid digestion, and prevent asthma. Recognizing these benefits, NAFED has encouraged millet cultivation and utilization, promoting a diversified and sustainable food system. The establishment of the Millets Experience Centre, Shree Anna, at Dilli Haat in New Delhi showcases the nutritional benefits and culinary versatility of millets, promoting their consumption across all age groups. NAFED has also supported millet-based startups and introduced Millet

Corners in NAFED Bazaar stores, further amplifying the availability of millet-based products.

- **Bharat Atta:** Bharat Atta, a premium-quality whole wheat flour launched under the Government's Open Market Sale Scheme, offers an affordable and nutritious option high in dietary fibers, vitamins, and minerals. By providing Bharat Atta at a concessional rate, NAFED helps mitigate the rising prices of wheat flour, supporting food security and healthy eating.
- **Bharat Chawal:** Similarly, NAFED's Bharat Chawal initiative ensures access to high-quality, nutritious rice varieties at affordable prices, reinforcing the organization's dedication to promoting healthy eating.
- **Bharat Dal:** Bharat Dal, another initiative, emphasizes the cultivation and consumption of pulses, which are high in protein, fiber, and essential micronutrients. Pulses are environmentally friendly, requiring less water to grow and improving soil fertility, making them a sustainable food choice.
- **Government Support and Initiatives:** NAFED's comprehensive approach to promoting healthier food options involves collaboration with farmers, retailers, and government agencies. This holistic strategy has positively impacted the agricultural sector and the health and well-being of consumers.

Conclusion: The increasing demand for healthier food options aligns with global efforts to address climate change and food security. Initiatives like NAFED's Bharat Atta, Bharat Dal, Bharat Rice, and promotion of millets play a crucial role in meeting consumer expectations while supporting sustainable agriculture. By choosing these products, consumers not only ensure better nutrition but also support local farmers and promote agricultural diversity. This shift towards healthier and more sustainable food choices is essential for building a resilient food system for future generations, empowering consumers to contribute to a nutritious and environmentally responsible food landscape.

Export Potential

India's processed food sector has immense export potential, but there are several key areas that need attention to fully capitalize on this opportunity:

- **Infrastructure and Technology:** Investment in modern infrastructure, such as food parks, cold chains, and processing facilities, is crucial. Initiatives like the Pradhan Mantri Kisan Sampada Yojana (PMKSY) and Mega Food Parks are steps in the right direction. These parks provide modern processing facilities that meet international standards, reducing spoilage and extending shelf life, thus making exports more viable.
- **Policy Support:** The Production Linked Incentive Scheme for Food Processing Industry (PLISFPI), approved in March 2021, aims to diversify India's export

portfolio by focusing on value-added segments and incentivizing manufacturing in specific food product segments. This scheme also promotes innovative and organic products from SMEs. A data-driven policy approach can help identify and maximize export potential.

- **Compliance with Standards:** Ensuring compliance with international food safety standards is essential. The WTO SPS agreement advocates for harmonized sanitary and phytosanitary measures. However, many emerging national and private standards pose challenges for SMEs. Creating a centralized repository of standards for SMEs to refer to could help in compliance.
- **Trade Agreements:** Aggressively negotiating Free Trade Agreements (FTAs) with various countries can improve market access through duty concessions. Including Mutual Recognition Agreements (MRA) in these agreements can ensure that products certified locally do not require additional certification abroad.
- **Farmer Producer Organizations (FPOs):** Promoting FPOs can ensure a steady supply of consistent-quality raw materials, which is crucial for maintaining the standards of processed food products destined for export. Enhancing interaction and linkages between farmers and processors can strengthen the value chain.
- **Skill Development:** Tailored capacity-building programs and training sessions in food processing clusters can help local manpower align with export demands. Introducing professional courses in food technology, food science, food engineering, and food packaging can develop the necessary skill base for the industry.
- **Marketing and Promotion:** Enhanced marketing efforts, including participation in global trade fairs, can expose global buyers to Indian processed food exporters. Government support to encourage companies, especially startups and MSMEs, to engage in such activities is essential for showcasing India's capabilities.
- **Logistics:** Efficient logistics, including cold chains, temperature-controlled warehouses, and reefer vans, are critical for maintaining the quality of goods during transportation. Adequate infrastructure at clusters and ports is necessary to ensure smooth and efficient export processes.

Conclusion: India has the potential to significantly increase its exports in the processed food sector by leveraging its agricultural resources, investing in infrastructure and technology, ensuring compliance with international standards, developing skilled manpower, improving logistics, and enhancing marketing efforts. Continued government support, industry collaboration, and innovation will be instrumental in transforming India into a globally competitive player in the international food market.

The Coconut Craze: The Allure and Benefits of Coconut Products

Imagine a pristine white sand beach, where clear turquoise water gently laps against the shore, and coconut palms sway gracefully under the blue sky. This picturesque tropical paradise is not just a dream destination but also a symbol of a much bigger fascination—the craze for coconuts and their diverse products, a trend that is here to stay.

- **The Versatile Coconut Palm:** The coconut palm is a vital crop in tropical regions, especially in coastal areas. It's renowned for its contribution to sustainable agriculture, supporting environmental, social, and economic sustainability. Traditionally recognized as an oil crop, coconuts have, over the last three decades, diversified into a myriad of food products, making them a nutritive powerhouse in the global market.
- **Coconut Oil (A Traditional Staple with Modern Uses):** Coconut oil, derived from the dried kernel (copra) of the coconut, has long been used in South India for cooking and as a topical application for skin and hair. Today, it's a key ingredient in beauty products and the oleo-chemical industry due to its medium-chain fatty acids, primarily lauric acid, which boosts immunity. Modern fractionation techniques have further enhanced its health benefits, promoting it as a health supplement.
- **Virgin Coconut Oil (A Health Elixir):** Emerging in the late 1990s, VCO is the purest form of coconut oil, produced without heat, thus preserving its beneficial components. Numerous clinical studies have confirmed its medicinal properties, including benefits for skin care, managing Alzheimer's and Diabetes, reducing abdominal obesity, and more. In countries like Indonesia, VCO is even sold in pharmacies as a daily health supplement.
- **Coconut Water (Nature's Rehydrating Drink):** Coconut water is celebrated globally for its rehydrating properties, rich in vitamins, minerals, electrolytes, and antioxidants. It gained fame during WWII when American soldiers in the Pacific Islands used it as a survival drink. Today, it's a popular beverage marketed by major companies like PepsiCo and Coca-Cola, known for its natural rehydrating and health benefits.

Diversified Coconut Products

- **Desiccated Coconut:** Used in snacks and bakery products, it is naturally vegan and gluten-free.
- **Coconut Milk and Coconut Milk Powder:** Essential in South and Southeast Asian cuisine, offering a vegan alternative to dairy.
- **Nata de Coco:** A gel-like product from fermented coconut water, popular for its fiber-rich and refreshing properties.

- **Coconut Neera and Value-Added Products:** Neera, a sweet drink from the coconut inflorescence, can be processed into syrup, honey, jaggery, and sugar, all rich in nutrients and with a low glycemic index.
- **Coconut Chips:** A healthy snack alternative, available in various flavors.
- **Coconut Vinegar:** A natural substitute for synthetic vinegar, ideal for cooking.
- **Coconut Haustorium-Based Products:** Nutrient-rich haustorium processed into candies, powders, and health mixes.

- **Support for Coconut-Based Industries:** The Coconut Development Board actively promotes the processing and value addition of coconuts through technology development, training, and financial assistance. Nearly 580 processing units in India produce a wide range of coconut products, contributing significantly to rural livelihood security.
- **The Future of Coconut Products:** The coconut food industry continues to evolve, offering a growing variety of value-added products to meet diverse consumer preferences. As health consciousness rises globally, the demand for natural, healthy products like coconut oil, coconut milk, and coconut water is increasing. This trend highlights coconut's potential in addressing global hunger and poverty while providing health and nutritional benefits.

Conclusion: Coconut truly lives up to its name as the "Kalpavriksha" or tree of life, offering both a serene visual escape and a wealth of health-boosting products. As we continue to explore and innovate, the versatile coconut promises to play an integral role in promoting wellness and sustainability worldwide. Let's embrace the goodness of coconuts and all they offer.

KURUKSHETRA: Enhancing Innovation in Rural India

Making Lakhpati Didis: Multiple Livelihoods Show the Way

Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM): An Overview

DAY-NRLM is one of the world's largest poverty eradication programs, managed by the Ministry of Rural Development, Government of India. The mission aims to mobilize poor households into Self-Help Groups (SHGs) and support them through capitalization, inter-loaning, and connections to formal financial institutions. More than 10 crore households have been mobilized into 91 lakh SHGs, which are provided with the necessary support to sustain and enhance their livelihoods.

Key Features of DAY-NRLM

- Mobilization and Financial Inclusion:** DAY-NRLM has achieved significant milestones in mobilizing poor households and ensuring their financial inclusion. However, as this process has reached saturation, the focus has now shifted to creating sustainable livelihoods for SHG members.
- Livelihood Interventions:** These interventions aim to create different livelihood models across farm and non-farm sectors to enhance household income, with a goal for each household to earn at least one lakh rupees per year. This initiative is known as "Lakhpati Didis."
- Integrated Farming Clusters (IFCs):** IFCs are critical in the Lakhpati Didis initiative. Each IFC comprises two to three intervention villages, covering about 250-300 households. These households are supported with multiple livelihood options and strong backward and forward linkages, ensuring regular income streams throughout the year.
- End-to-End Value Chain Approach:** The strategy involves asset creation for production and processing, skilling producers, ensuring access to affordable credit, and facilitating access to markets and improved technologies. This approach aims to create consistent output and high profitability, protecting farmers from market fluctuations.
- Tripartite MoU:** In 2021, a tripartite MoU was signed between the Indian Council of Agricultural Research (ICAR), RCRC (a conglomerate of civil society organizations), and DAY-NRLM to facilitate implementation. This partnership supports the technical aspects and facilitates the program's implementation.

Objectives of DAY-NRLM

- Provide End-to-End Solutions:** The mission aims to offer comprehensive solutions under various interventions to enhance rural households' income.
- Empower Women:** Women are central to all interventions, both as farmers and entrepreneurs. The project design encourages active participation and aims to change societal mindsets in favor of women's participation.

Implementation Framework

- Identification of Geography and Households:** The geographical contour of an IFC is crucial for approachability, common commodities, and social structure. Beneficiaries are drawn from existing SHGs involved in farm livelihood activities.
- Placement of Human Resources:** Two dedicated human resources – an IFC anchor and a Senior Community Resource Person (CRP) – are deployed for smooth project implementation. These individuals are trained and equipped to manage the project effectively.

- Baseline Survey:** An initial socioeconomic survey helps identify potential interventions, plan development, and establish base figures for future outcome indicators.
- Development of Training and Capacity Architecture:** Training material is developed for CRPs, Mahila Kisan households, and staff based on the unique needs of each cluster.
- Business Plan for Commodity-Wise Intervention:** Business plans are developed for activities related to production, processing, and marketing. This involves collective visualization of the marketing aspect and creating a proper business plan with projections on various aspects.
- Livelihood Service Centre (LSC):** LSCs serve as hubs for input, processing, and output services. They provide essential services like input shops, agri-machinery, and livestock clinics, and help in procuring, sorting, grading, and bulk selling of produce.

Marketing Side Intervention

- Commodities with Limited Post-Harvest Value Addition:** Interventions focus on pre-production, production, and post-harvest upgrading and sorting.
- Commodities with High Post-Harvest Value Addition:** Interventions include processing, packing, and establishing processing facilities.
- Livestock Value Addition:** Investments are made to improve animal health through vaccination and scientific rearing.

Success Story: Kondagaon Block

In Kondagaon block of Kondagaon district, Chhattisgarh, the success of an IFC cluster has shown exemplary results. The intervention across maize, vegetables, non-timber forest produce, and backyard poultry has increased monthly income from Rs. 1,000 to Rs. 12,000 per member. This planned intervention has significantly improved food sufficiency and has been a major game changer in the Lakhpati Didi initiative.

Conclusion: Integrated Farming Clusters under DAY-NRLM provide sustainable livelihood options to rural SHG households. With proper planning and market-centered strategies, these initiatives have brought out entrepreneurial qualities in individuals and enhanced women's incomes significantly, surpassing the vision of Lakhpati Didis.

Cultivating Progress

Rural India, with its vast population and diverse challenges, is at a pivotal point in its development trajectory. Several key aspects:

- Current Landscape:** Rural India, despite challenges like inadequate infrastructure and educational disparities, has seen significant poverty reduction due to government initiatives like MGNREGA and PMAY-G.

- **Technological Innovations:** The integration of digital technology, renewable energy solutions, and advanced agricultural practices is transforming rural economies. Initiatives like precision farming, drones for crop monitoring, and solar microgrids are enhancing productivity and livelihoods.
- **Government Initiatives:** Various schemes such as PMUY for clean cooking fuel, Swachh Bharat Mission for sanitation, and PM-KUSUM for solar-powered irrigation are pivotal in improving rural living standards and sustainability.
- **Agricultural Innovations:** Precision farming, drones, digital platforms like eNAM, and sustainable practices like organic farming and FPOs are boosting agricultural productivity and farmer incomes.
- **Renewable Energy:** Solar and wind energy are revolutionizing rural energy access, with schemes like PM-KUSUM and initiatives in states like Rajasthan and Gujarat significantly impacting energy security and economic development.
- **Sustainable Livelihoods Beyond Agriculture:** Decentralized renewable energy solutions, water management initiatives, and promoting green jobs are enhancing income opportunities and environmental sustainability in rural areas.
- **Challenges and Opportunities:** Challenges include grid integration issues, financial barriers, and policy inconsistencies, while opportunities lie in advancements in energy storage, expansion of decentralized renewable energy solutions, and leveraging green hydrogen.
- **Policy and Institutional Support:** Strong policy frameworks, financial incentives, and institutional support from agencies like MNRE and IREDA are crucial for scaling up renewable energy adoption in rural India.

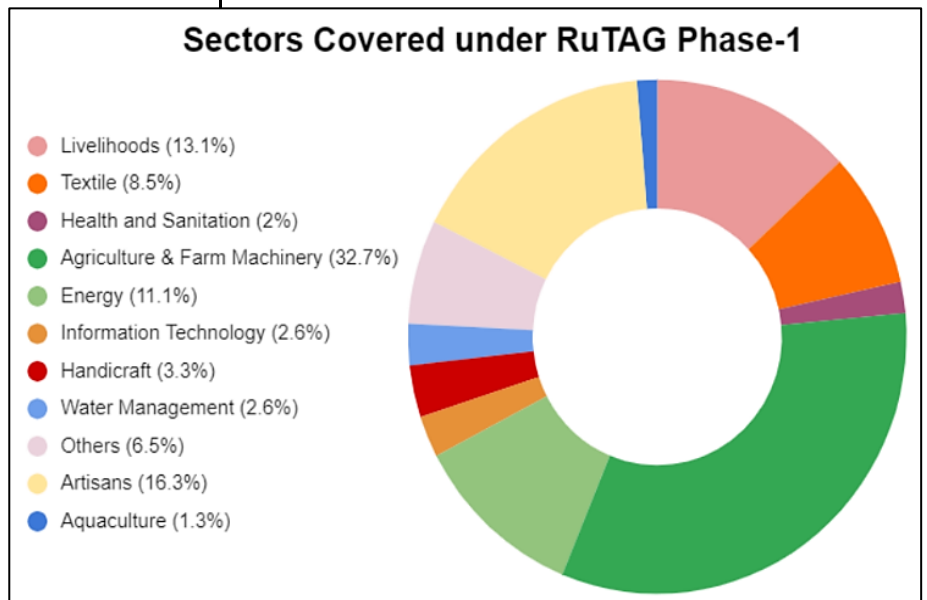
India is navigating successfully to the transition towards renewable energy, particularly in rural areas, to achieve sustainable development and enhance the quality of life for its rural population.

Innovations: Driver of the Rural Growth & Development

Various innovative initiatives in rural India aimed at promoting the judicious use of organic and inorganic fertilizers to reduce chemical dependency. The National Agricultural Research and Education System (NARES), comprising ICAR and State Agricultural Universities, plays a pivotal role in driving agricultural R&D.

Agricultural Innovations:

- **Soil Health Card (SHC):** Provides farmers with information about soil fertility, promoting judicious use of fertilizers.
- **Sensor-Based Soil Moisture Meter:** Helps in efficient irrigation by detecting soil moisture levels.
- **Leaf Colour Chart (LCC):** Assists farmers in determining crop nutrient needs at different growth stages.
- **Pusa Decomposer:** Facilitates rapid decomposition of paddy residues, enhancing soil fertility and reducing crop burning.
- **Happy Seeder:** Manages paddy residue effectively, promotes cleaner environment, and saves water.
- **Evaporative Cooling Unit:** Keeps fruits and vegetables fresh in high temperatures, reducing spoilage.
- **Herbicide Tolerant Crops:** Enables controlled application of herbicides, enhancing weed control



efficiency.

Institutional and Entrepreneurial Innovations:

- **RuTAG (Rural Technology Action Group):** Supports rural innovation projects across various sectors including agriculture, energy, and water management.
- **Custom Hiring Centres (CHC):** Provides access to agricultural machinery, reducing drudgery and improving efficiency.
- **Startup India and MUDRA Loan Scheme:** Promote entrepreneurship and rural enterprises.
- **AgriTourism and Home Stays:** Offers rural experiences and hospitality services, attracting urban tourists.
- **Digital Innovations:** Include apps for crop management, e-NAM for agricultural marketing, and AI-based disease identification systems.

Digital and Technological Innovations:

- **Mobile Apps:** Such as RiceXpert, nXpert, and AI-DISC for crop management and disease identification.

- **e-National Agricultural Market (e-NAM):** Facilitates competitive pricing and direct sales for farmers.
- **5G Intelligent Village Initiative:** Uses 5G technology to develop rural communities.
- **Meghdoot and Damini Apps:** Provide weather information and lightning alerts respectively for agriculture.

Healthcare and Education Innovations:

- **Telemedicine and Mobile Health Clinics:** Improve access to healthcare in remote areas.



- **Digital Education Platforms:** Enhance educational opportunities in rural areas.
- **PMKVY (Pradhan Mantri Kaushal Vikas Yojana):** Provides vocational training to rural youth.

Energy Innovations:

- **Solar and Wind Power:** Provide renewable energy solutions in rural areas.
- **PM-KUSUM Scheme:** Promotes solar energy for agricultural irrigation.

Institutional Reforms:

- **Panchayati Raj Institutions:** Supported by apps like GS Nirnay and Panchayat NIRNAY for efficient governance.
- **Water Budget Audit:** Aids in water conservation and management.

Conclusion: The innovations outlined in the document are aimed at addressing traditional challenges faced by rural India while unlocking new opportunities for growth and prosperity. By fostering continued innovation and investing in scalable solutions, India aims to ensure holistic rural development and inclusivity in its journey towards economic progress.

Rebooting Operations Flood

India's dairy industry saw significant growth post-Operation Flood, focusing on increasing milk production and rural incomes. The sector has achieved substantial production volumes and global leadership in milk output. Despite high production, India faces challenges such as low productivity per cow, quality issues, and market inefficiencies leading to price disparities and adulteration concerns. The industry is adopting automation, AI, and data-driven decision-making to improve efficiency, manage herds better, and enhance milk quality. Technologies like automated milking systems, precision feeding, and sustainable practices are being implemented to address these challenges.

Growth and Achievements

- **Production Growth:** India's dairy sector has grown at a Compound Annual Growth Rate (CAGR) of 5.85%, with a significant increase in volume over recent years. It reached 230.58 million tons in 2022–2023, making India the largest milk producer globally with a 24.64% share.
- **Key States:** Rajasthan, Uttar Pradesh, Madhya Pradesh, Gujarat, and Andhra Pradesh contribute significantly to India's milk production, collectively accounting for 53.11%.
- **Export:** In 2022–2023, India exported 67,572.99 MT of dairy products worth \$284.65 million.

Challenges

- **Per Capita Consumption:** Despite leading in production, India's per capita consumption of fluid cow milk (59.98 kg in 2022) is lower compared to developed nations.
- **Productivity Issues:** India faces challenges in dairy productivity, with lower yields per cow compared to other countries like the EU.

Technology and Innovation

- **Automation:** The dairy sector is adopting automation extensively. Automated milking systems have revolutionized dairy farming by improving efficiency and milk yield while reducing labor costs.
- **Precision Feeding:** Technology-driven precision feeding optimizes nutrition tailored to individual cows, enhancing health and productivity.
- **Data-Driven Decision-Making:** Data analytics help monitor cattle health, reproduction, and milk quality in real-time, aiding proactive management and increasing milk production.
- **Sustainable Practices:** Technologies like smart barns and automated irrigation systems reduce environmental impact through efficient resource use and waste management.

Future Directions

- **Innovation Needs:** India is urged to innovate further to enhance dairy productivity, ensure sustainability, and address challenges such as climate change impacts and fluctuating milk prices.

- **Market and Consumer Dynamics:** The industry needs to cater to diverse consumer needs, including health-conscious choices and functional dairy products.

Conclusion: Technology and automation are crucial for the future of India's dairy industry, driving efficiency, sustainability, and profitability. Embracing advanced technologies and innovation is essential for addressing current challenges and positioning India as a leader in the global dairy market.

Rural India: Innovation for Inclusiveness

According to the United Nations, innovation for development entails employing the latest ideas and tools to discover more effective ways of making a positive impact on people and the planet. This process strengthens resilience and fosters the construction of more inclusive societies. India has shown consistent improvement in its Global Innovation Index (GII) ranking, climbing from 48th place in 2020 to 40th in 2023, surpassing 37 lower-middle-income economies in Central and Southern Asia. Between 2001 and 2020, India's specialization in scientific and technological capabilities increased significantly, from 42% to 68% and from 9% to 21%, respectively. Innovation has consistently been a cornerstone of progress, reinforced by government policies over the past few decades with inclusive development at their core. For instance, the number of telephone connections surged from 41 million to 943 million during 2001-2012, with mobile phones alone accounting for 911 million connections. This growth, coupled with competitive market dynamics leading to declining tariffs, positioned India as the world's fastest-growing telecommunications market, outpacing its peers in Central and Southern Asia by a wide margin. During this period, rural tele-density increased from 1.7% in 2004 to 58.5% in 2023, marking a more than 30-fold increase. The urban-to-rural tele-density ratio decreased from 12.24 to 2.29, indicating improved connectivity across regions. The Prime Minister Wi-Fi Access Network Interface (PMWANI) scheme aims to enhance broadband access through public Wi-Fi hotspots, particularly benefiting rural areas and contributing to greater internet penetration. These achievements vividly illustrate how innovation initiatives have fostered inclusivity, particularly in rural communities.

Telecommunications and Digital Connectivity:

- India has seen remarkable growth in telecommunications, especially mobile phones, which has significantly increased tele-density in rural areas.
- Initiatives like the PM-WANI scheme aim to provide broadband through public Wi-Fi, enhancing internet penetration in rural regions.

Healthcare:

- The e-Sanjeevani initiative, a national telemedicine service, has enabled over 241 million consultations, benefiting rural populations by providing access to healthcare professionals remotely.

Education:

- Digital platforms like the DIKSHA portal have helped bridge the urban-rural education gap by providing access to high-quality learning resources.
- AI integration in education apps supports customized learning experiences, making education more inclusive.

Banking and Finance:

- Aadhaar-based banking has streamlined KYC processes, facilitating access to financial services for rural populations.
- Digital payment solutions and agent banking have improved financial inclusion by making banking services more accessible in remote areas.

Agriculture:

- Technological innovations like drones are enhancing agricultural productivity by enabling precision farming techniques such as pesticide spraying and crop monitoring.
- Mobile apps provide farmers with crucial information on weather forecasts, market prices, and agricultural practices.

Access to Clean Water:

- Startups like Boon and technologies like the Bhujal app are addressing water scarcity issues by providing clean water solutions and tools for efficient groundwater management.
- Innovations such as Kheyti's Greenhouse-in-a-Box are promoting sustainable agriculture by reducing water usage and increasing crop yields.

Conclusion: Innovation in rural India plays a crucial role in achieving Sustainable Development Goals (SDGs) and promoting inclusive growth. There is also the need for robust digital infrastructure to sustain these innovations and ensure rural inclusiveness.

DOWN TO EARTH

Insured against heat

India is currently grappling with intense heat stress, with the India Meteorological Department (IMD) reporting heatwaves affecting 14 states and Union Territories in April and 24 in May. Unusual temperatures have become a recurrent challenge for the country, which has experienced 12 of its warmest years since 1901 in the past 15 years. Heat stress poses severe risks to animal health and productivity, particularly affecting dairy cows.

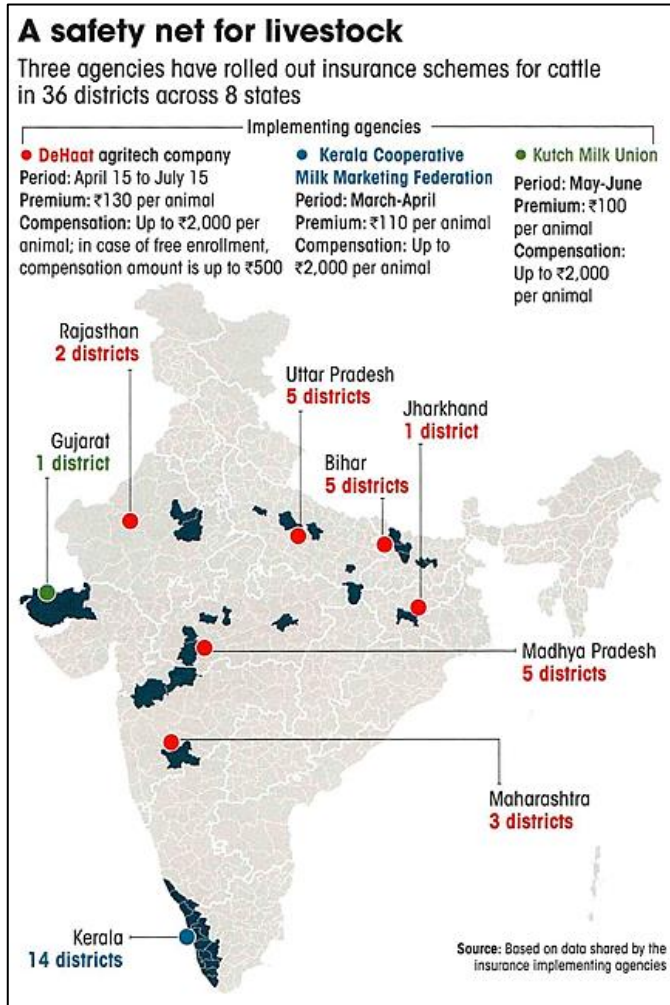
Heat Stress Impact: Rising temperatures due to climate change are adversely affecting milk production in dairy cows across India. Dairy farmers, particularly small and marginal ones, face significant economic losses during peak summer months when milk yields drop due to heat stress.

Insurance Initiatives: Both government and private entities are introducing parametric insurance schemes to compensate farmers for reduced milk production caused by

heat stress. These schemes are designed to trigger payouts based on specific temperature thresholds and duration of heatwaves.

Examples of Schemes:

- **Kerala:** The Saral Krishi Bima scheme compensates farmers based on temperature data for specific districts, providing financial relief during periods of extreme heat.
- **DeHaat:** A private agritech company offers similar insurance across multiple states, tying compensation amounts to temperature thresholds that affect milk production.



Challenges and Limitations:

- **Seasonal Coverage:** Insurance schemes like those in Kerala are limited to specific months, potentially leaving farmers vulnerable outside the coverage period despite ongoing heat stress.
- **Data and Parameters:** Current schemes primarily use temperature data, lacking humidity considerations which are crucial for comprehensive heat stress assessments in livestock.

International Examples and Learnings:

- **Kenya:** Had a livestock insurance program that faced challenges with rising compensation demands, leading

to discontinuation and adoption of alternative financial savings programs.

- **Europe:** Implements more comprehensive insurance programs like Heat Stress Protect, covering economic losses beyond milk production, such as reproductive efficiency and cow health.
- **Beyond Insurance:** While insurance provides crucial financial support, long-term solutions involve improving livestock resilience through better nutrition, cooling technologies like hydroponics, and infrastructure enhancements.
- **Government Role:** There is a call for integrating such initiatives with existing national programs for dairy development and animal husbandry to enhance resilience and sustainability in the sector.

Conclusion: There is a need for holistic approaches beyond insurance, including infrastructure improvements (e.g., cooling systems for cowsheds) and agricultural practices (e.g., hydroponics for better feed quality). Integration of such solutions into national dairy development programs is essential to build resilience among dairy farmers facing multiple environmental and economic challenges.

Ground rules

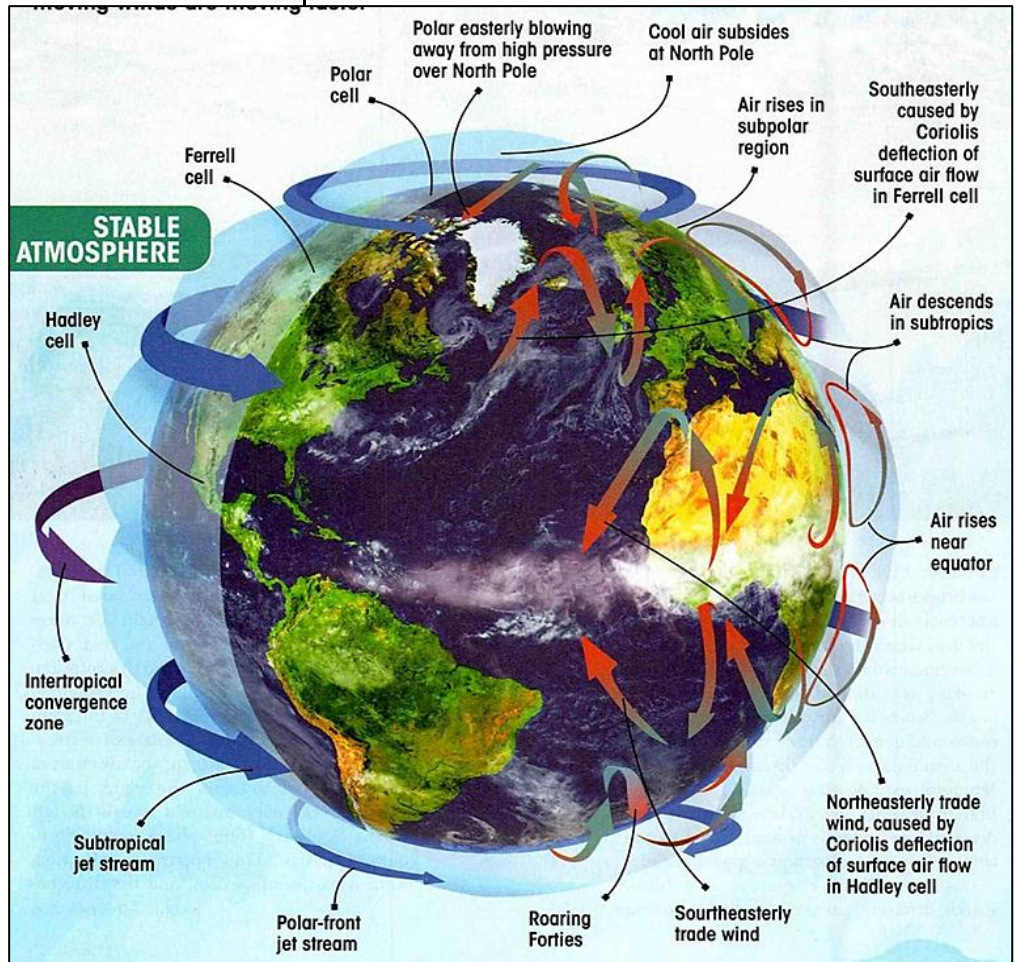
Both space agencies and private entities must follow exploration guidelines to maintain the integrity of space research. In 2018, Swarm Technologies, a US startup, launched four small satellites into space aboard an Indian rocket carrying 31 payloads. Despite being denied a license by the US government due to their satellites' small size making them difficult to track in space, Swarm proceeded with the launch. In February 2019, Israel's SpaceIL and Israel Aerospace Industries launched Beresheet, the country's inaugural lunar mission and the first private attempt to land on the moon. Unfortunately, the mission ended in failure when the spacecraft crashed on the lunar surface later that year. Subsequently, it was revealed that the Arch Mission Foundation, a US non-profit, had clandestinely included tardigrades, microscopic eight-legged animals, on board Beresheet. Tardigrades, known for their resilience, are unable to reproduce or thrive in the absence of liquid water and oxygen, but their presence on the moon raised ethical concerns. These incidents underscore not only the expanding role of the private sector in space exploration but also its readiness to bypass or violate fundamental regulatory principles. Among these, the paramount principle is to safeguard the solar system against contamination by Earth life forms and to protect Earth from potential extraterrestrial organisms, as mandated by Article IX of the Outer Space Treaty (OST), a legally binding agreement in effect since 1967. Currently, 116 nations have ratified the OST and are responsible for ensuring that private entities within their jurisdictions adhere to these planetary protection norms.

- **Planetary Protection Norms:**

- **Outer Space Treaty (OST):** Established in 1967, it mandates safeguarding celestial bodies from contamination by Earth life and vice versa.
 - **COSPAR Guidelines:** Developed by the Committee on Space Research, these provide categories for missions based on contamination risk to celestial bodies and Earth upon return.
 - **Voluntary Compliance:** While COSPAR guidelines are widely followed by space agencies like NASA and ESA, they are not legally binding.
 - **Challenges with Private Sector Compliance:**
 - **Elon Musk and SpaceX:** Expresses disregard for strict planetary protection protocols, arguing against the presence of life on Mars and advocating for a more relaxed approach.
 - **Legal and Regulatory Gaps:** Lack of incorporation of COSPAR guidelines into national laws and limited oversight of private missions could lead to ethical breaches.
 - **International Efforts and Policy Updates:**
 - **COSPAR's Initiatives:** Hosting the International Planetary Protection Week to engage stakeholders including private companies in improving and clarifying planetary protection policies.
 - **Future Directions:** Discussing new policies for exploring icy worlds to address potential life forms.
 - **Recommendations and Concerns:**
 - **Legal Obligations:** Advocacy for nations to enforce COSPAR guidelines through national legislation to ensure private sector accountability.
 - **Expanded Role of COSPAR:** Suggestions to include legal and political experts within COSPAR to monitor compliance and formulate robust recommendations.
- Conclusion:** The delicate balance between advancing space exploration and adhering to ethical principles outlined in international treaties like the OST and guidelines from COSPAR need to be protected. It highlights the need for stronger regulatory frameworks to ensure that private companies adhere to planetary protection norms to safeguard both Earth and celestial bodies.

Brace for Still Winds

Imagine a world without wind—a world where the gentle sea breeze no longer brushes against our cheeks, kites cease to soar, trees stand still without swaying or rustling leaves, and pollen and seeds no longer scatter far and wide. Such a scenario would mean weather patterns remain



unchanged, rain-bearing clouds fail to reach dry lands, and the redistribution of temperature across the globe diminishes. Areas around the equator would experience intense heat, while the poles would freeze solid. Ecosystems could be severely affected, potentially leading to the disappearance of some. Local concentrations of harmful gases, such as carbon dioxide released during wildfires, would linger longer without wind to disperse them. Ocean currents, which bring essential nutrients to the surface and aid navigation, would stagnate. While this might seem like a plot from a post-apocalyptic novel, recent observations indicate that large-scale wind systems, crucial for circulating air around the planet, are slowing down.

Importance of Wind:

- **Environmental Impact:** Wind is essential for distributing heat and moisture across the planet, influencing weather patterns, ocean currents, and ecosystems.

- **Economic and Cultural Significance:** Historical trade routes, agriculture, and maritime navigation heavily rely on predictable wind patterns.

Wind Circulation Systems:

- **Hadley Cell:** Located near the equator, where warm air rises and moves towards the poles, creating tropical trade winds.
- **Ferrel Cell:** Found between 30° and 60° latitudes, characterized by westerly winds that play a crucial role in weather patterns in mid-latitudes.
- **Polar Cell:** Operates near the poles, involving cold, sinking air that moves towards lower latitudes, contributing to polar easterlies.

Jet Streams:

- **Role:** Fast-flowing, narrow bands of wind in the upper troposphere that influence the movement of weather systems.
- **Types:** Polar jet streams and subtropical jet streams are crucial for atmospheric circulation and weather patterns.

Observations of Wind Stilling:

- **Global Trends:** Studies indicate a significant decrease in wind speeds over the past decades, particularly noticeable across Europe, Asia, and North America.
- **IPCC Findings:** Predictions suggest a continued decline in global wind speeds by 8-10% by 2100, impacting climate variability and extreme weather events.

Causes of Wind Stilling:

- **Climate Change:** Alterations in temperature differentials due to global warming affect air density and pressure gradients essential for wind formation.
- **Regional Factors:** Land-use changes, urbanization, and natural variability contribute to local variations in wind patterns.

Implications:

- **Climate Extremes:** Reduced wind circulation could lead to more extreme temperatures, with equatorial regions becoming hotter and polar regions experiencing more severe cold.
- **Ecosystem Changes:** Wind patterns influence ocean currents that bring nutrients to surface waters, affecting marine ecosystems and fishing industries. Changes in wind could disrupt these currents, leading to ecological shifts.
- **Air Quality:** Slower winds could hinder the dispersion of pollutants and airborne particles, affecting air quality and exacerbating local environmental issues.

Concerns and Future Research:

- **Scientific Community Response:** Ongoing research aims to understand the complex interactions between climate change and wind patterns, advocating for stronger monitoring and mitigation efforts.

- **Policy Implications:** Calls for integrating wind monitoring into climate change adaptation strategies and strengthening international cooperation on environmental stewardship.

Organizations such as the IPCC have highlighted the possible long-term effects of wind weakening on the global climate. While the complete scope and consequences of global wind weakening are still under investigation, its capacity to disturb weather systems, ecosystems, and human endeavors underscores the criticality of preemptive actions to tackle climate change and uphold environmental equilibrium. Initiatives are currently in progress to deepen our understanding of these shifts and formulate strategies to lessen their repercussions, emphasizing the necessity for thorough monitoring and research.

The New Extreme Event

Wind circulations are decelerating in a warming world, exacerbating the frequency and severity of extreme events. On May 29, 2024, during a severe heatwave across northern and central India, the Mungeshpur weather station recorded an alarming temperature of 52.9°C, purportedly the highest ever in the country. Despite the Indian Meteorological Department's clarification attributing this anomaly to sensor error or local factors, several other stations reported temperatures ranging from 45.2°C to 49°C, marking record highs for May in cities like Chandigarh and Delhi.

Significant changes in global wind patterns due to climate change, impacting various regions and weather phenomena worldwide. Here are the key points and implications highlighted in the article:

- **Weakening Trade Winds and Heatwaves in India:**
 - The weakening of trade winds in the Hadley Cell has intensified heatwaves in India, such as the record-breaking temperatures observed in Delhi and other parts of northern India. This weakening allows warm winds from the Arabian Sea to dominate, contributing to extreme heat conditions.
- **Impact on Tropical Cyclones and Hurricanes:**
 - NOAA and the UK Met Office predict an above-normal hurricane season in the Atlantic due to reduced Atlantic trade winds and warm ocean temperatures. This setup favors the formation and intensification of tropical storms and hurricanes, posing risks to coastal regions.
- **Acceleration of Jet Streams:**
 - Research indicates that jet streams, especially the fastest jet streaks, are accelerating as a result of global warming. This acceleration is linked to increased temperature contrasts between tropical and polar regions, influencing weather patterns and

potentially contributing to more frequent tornado outbreaks in the US.

- **Shifts in Western Disturbances and Weather Patterns:**

- The Ferrel Cell's westerlies, which influence weather systems in middle latitudes, are weakening and shifting poleward. This change affects the frequency and intensity of western disturbances, altering precipitation patterns crucial for water security and agriculture in regions like the Himalayas.

- **Impact on Wind Energy:**

- Changes in wind patterns directly affect wind energy generation. Slower wind speeds, observed during periods like the "wind drought" in northwest Europe, reduce energy output from wind farms, highlighting the vulnerability of renewable energy sources to climate-driven shifts in wind patterns.

- **Global Atmospheric Circulation Changes:**

- The overall circulation of the atmosphere, including polar easterlies and the polar cell, is also affected. This contributes to broader climate impacts such as altered precipitation patterns, sea level changes, and potential disruptions to oceanic circulation systems like the Atlantic Meridional Overturning Circulation (AMOC).

- **Future Concerns and Research Directions:**

- Researchers emphasize the need for enhanced monitoring and understanding of wind patterns using advanced technologies to predict and mitigate the impacts of climate-driven changes on weather extremes, agriculture, energy production, and global climate systems.

Conclusion: While the complexities of changing wind patterns continue to unfold, their profound impacts on weather extremes, ecosystems, and human activities underscore the urgency of mitigating climate change and bolstering resilience to its effects globally.

Catching the Wind

Wind is increasingly recognized as a critical factor in understanding and predicting climate change impacts, yet it remains one of the more challenging variables to model accurately due to limited historical data and complex interactions within Earth's atmosphere. This difficulty is exacerbated by the phenomenon known as "global terrestrial stilling," where surface-level wind speeds have shown a consistent decrease over recent decades, despite localized variations.

Impact of Weakening Winds

- **European Heatwaves and Droughts:** Researchers, including Rei Chemke and Dim Coumou, have linked the weakening of storm systems that bring cold, moist air from oceans to land as a potential cause for the heatwaves and droughts experienced in Europe since 2017. Climate models indicate that summer storms in

the northern hemisphere between latitudes 30° and 60° have weakened due to warming trends.

- **Antarctic Sea Ice Extent:** Observations from the British Antarctic Survey and the National Center for Polar and Ocean Research indicate that changes in wind patterns have contributed to record-low sea ice extents in Antarctica since 2016. The shift in atmospheric pressure patterns, such as the eastward movement of the Amundsen Sea low pressure region, has influenced wind directions and temperatures, affecting ice expansion.

Challenges in Wind Data and Modeling

- **Data Deficiency:** Despite advancements in satellite technology and computational models, comprehensive, long-term wind data remains elusive. This lack of data poses significant challenges for accurately modeling future climate scenarios, particularly in regions like the Indian Ocean, where satellite observations are sparse. The ability to predict phenomena such as tropical cyclones and monsoon patterns is hindered by incomplete datasets.
- **Computational Limitations:** While computational tools like climate models, machine learning, and AI are advancing, understanding wind systems requires continuous, high-resolution data across spatial and temporal scales. Current methods, such as using proxy data from ocean bed dust cores, have limitations in providing a complete historical context of wind patterns.
- **Satellite Observations:** Initiatives like the European Space Agency's Aeolus satellite and NASA's CYGNSS have improved wind observations, particularly in tropical cyclone monitoring. However, challenges persist in accessing and utilizing this data effectively across global regions.

Future Directions

- **Enhanced Monitoring:** Improving wind measurement capabilities through enhanced satellite missions and ground-based observations is crucial for refining climate models and enhancing predictive accuracy. Access to comprehensive datasets is essential for monitoring changes in wind patterns and their impacts on global weather systems.
- **Integrated Approaches:** Integrating wind data with other climate variables, such as ocean temperatures and atmospheric pressures, can provide a more comprehensive understanding of climate dynamics. This interdisciplinary approach is essential for predicting and mitigating the impacts of climate change, including extreme weather events.

Conclusion: While progress is being made in understanding the role of wind in climate change, significant challenges remain in obtaining and utilizing accurate wind data. Addressing these challenges will be essential for advancing climate science and improving our ability to predict and adapt to future climate scenarios globally.

EPW

Rural–Urban Divergence in India’s Post-COVID-19 Economic Recovery

According to the Economic Survey 2022–23, the Indian economy is showing strong signs of recovery, outpacing many nations and is set to return to pre-pandemic growth levels by 2023–24. Despite grappling with inflation control, the economy’s resilience is evident from the resurgence in private consumption, fueled by pent-up demand. This resurgence has been facilitated by an extensive vaccination campaign, the world’s second-largest, which has encouraged people to engage in contact-based services, thereby boosting consumer confidence and supporting economic growth momentum (Economic Survey 2022–23). The analysis presented highlights the critical divergence in India’s post-pandemic economic recovery, with urban sectors rebounding robustly while rural areas lag significantly behind. The following points summarize the key aspects of this recovery and its implications:

Key Aspects of India’s Economic Recovery:

1. Urban-Led Recovery:

- **Private Consumption:** Urban consumption has been the main driver of recovery, fueled by pent-up demand and a robust vaccination drive.
- **Automobile Sales:** Passenger car sales have shown substantial growth, indicating strong urban demand. However, sales of two-wheelers and tractors, primarily purchased by rural consumers, have not rebounded as strongly.

2. Rural-Urban Disparity:

- **High-Frequency Indicators:** Data shows significant differences in recovery indicators such as fuel consumption, car sales, and mobility data, with urban indicators nearing pre-pandemic levels while rural indicators remain subdued.
- **Consumption Trends:** Rural consumption, especially of fast-moving consumer goods (FMCG), continues to decline, reflecting ongoing economic struggles in rural areas.

3. Impact of Inflation and Wages:

- **Inflationary Pressures:** Rising costs have disproportionately affected rural households, whose discretionary spending has been severely impacted.
- **Stagnant Wages:** Real wage growth in rural areas has remained stagnant or negative, contributing to the persistent demand slump.

Implications for Sustainability:

1. Growth Trajectory:

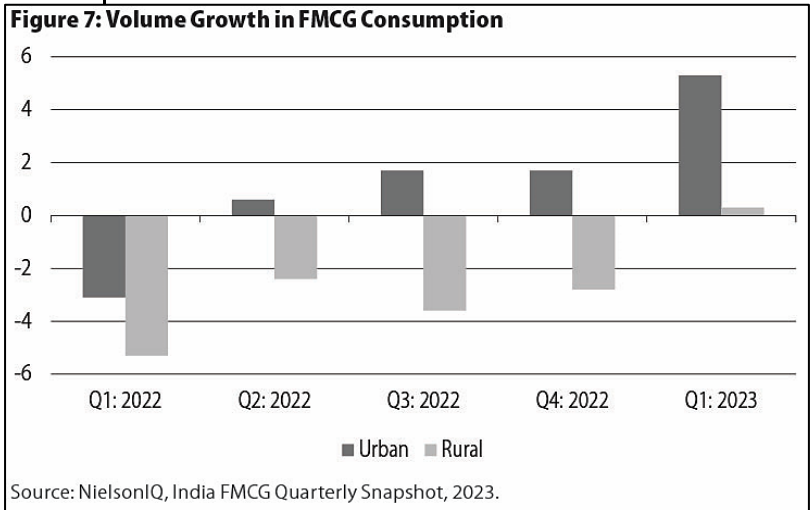
- **Lopsided Recovery:** The uneven recovery raises concerns about the long-term sustainability of India’s economic growth. The disparity between

urban and rural growth trajectories suggests that the benefits of recovery are not evenly distributed.

- **Investment-Led Growth:** The current recovery appears to be more investment-driven than consumption-driven, with significant capital expenditure by the government. This could lead to challenges if private consumption does not pick up sufficiently to sustain growth.

2. Challenges Ahead:

- **Income Inequality:** The sharp rise in income inequality, particularly affecting the rural poor,



threatens social stability and long-term economic health.

- **Need for Policy Intervention:** To ensure a more balanced and sustainable recovery, targeted policy measures are required to stimulate rural demand. This includes increasing public expenditure on rural development, enhancing social protection programs, and promoting income diversification in rural areas.

3. Strategic Focus:

- **Boosting Rural Demand:** Efforts should be made to enhance rural consumption through measures like improving access to credit, increasing agricultural productivity, and ensuring fair prices for agricultural products.
- **Strengthening Social Safety Nets:** Reinforcing social safety nets and income support programs can help mitigate the economic distress in rural areas and support overall demand.

Conclusion: While India’s economy shows signs of recovery from the pandemic, the skewed nature of this recovery raises questions about its sustainability. Addressing the rural-urban divide and ensuring inclusive growth through targeted policy measures is crucial for achieving a balanced and enduring economic recovery.

Massive Mismanagement of NEET and NET

On June 19, 2024, the Ministry of Education abruptly canceled the **University Grants Commission (UGC)**

National Eligibility Test (NET), which had taken place nationwide on June 18.

The ministry cited credible information from the **National Cybercrime Threat Analytics Unit of the Indian Cybercrime Coordination Centre (I4C)**, under the Ministry of Home Affairs, indicating irregularities in the exam's administration.

It was revealed that preliminary investigations indicated the NET question paper had been leaked on the **darknet and subsequently circulated on a social media platform**, matching the official exam paper. The abrupt cancellation of the UGC-NET exam follows ongoing protests over alleged mismanagement and irregularities by the National Testing Agency (NTA), particularly in the wake of premature NEET 2024 results announced on June 4, 2024. **The NTA, responsible for overseeing both NEET and NET exams nationwide**, faced criticism from students, parents, and leaders of coaching institutions regarding exam conduct.

● **Issues with NEET 2024 Results:**

- **Unprecedented Perfect Scores:** In a remarkable anomaly, 67 students achieved a perfect score of 720 in NEET 2024, contrasting sharply with only 2 in 2023 and none in 2022. This surge in perfect scores has sparked doubts about the fairness of the examination.
- **Controversy over Grace Marks:** Initially, 1,563 candidates received grace marks, leading to controversy and legal challenges due to inconsistencies and lack of transparency.
- **Paper Leaks:** Reports surfaced of paper leaks from exam centers in Godhra, Gujarat, and Patna, Bihar, further tarnishing the exam's credibility. Multiple petitions were filed demanding investigations and cancellation of results.
- **Supreme Court Intervention:** The Supreme Court intervened, consolidating petitions and issuing stays on proceedings in various high courts, emphasizing the need for a thorough investigation into any negligence.
- **Government and NTA Response:** Cancellation and Retest: Responding to public outcry and legal challenges, the NTA canceled the grace marks and offered a retest option to affected candidates. Legal and Public Pressure: The Ministry of Education faced pressure to address systemic issues and ensure fairness in examinations critical for medical admissions.
- **Broader Systemic Issues:**
 - **Failures in Education System:** The systemic failures in India's education and examination systems, highlighting compromised integrity in competitive exams.
 - **Legislative and Enforcement Gaps:** Despite legislative efforts like the Public Examinations

(Prevention of Unfair Means) Act, 2024, questions persist about enforcement and effectiveness.

- **Impact on Students:** The scandals have severe consequences on students' mental health and academic future, exacerbated by the competitive nature of medical admissions.
- Amid ongoing protests over NEET discrepancies, additional controversies erupted with the sudden cancellation of the University Grants Commission-National Eligibility Test (UGC-NET), affecting over nine lakh candidates due to concerns about compromised integrity. Additionally, allegations of a question paper leak prompted the postponement of the Council of Scientific and Industrial Research (CSIR)-UGC NET exam for two lakh science graduates. These incidents underscore significant deficiencies in the National Testing Agency's competence and governmental oversight.
 - Furthermore, the delay of the NEET-Postgraduate exam has increased uncertainty for medical students, deepening distrust in the examination process. The cancellation of UGC-NET is particularly notable as it marks the first instance of scrapping a centrally conducted public examination since the introduction of the **Public Examinations (Prevention of Unfair Means) Act, 2024**. Despite state-level laws aimed at criminalizing cheating, both central and state governments struggle to maintain transparency and fairness in examinations.
 - An Investigation by the Indian Express revealed 41 documented cases of examination paper leaks across 15 states in the past five years, affecting the futures of 1.4 crore young individuals. Cancellations of exams like the Uttar Pradesh Constable, Rajasthan Eligibility for Elementary Teachers (REET), and Telangana State Public Service Commission (TSPSC) Assistant Engineer exams in 2023 due to leaked papers further highlight systemic vulnerabilities and legislative inadequacies.
- **Challenges with the 'Anti-paper Leak' Law:** While a step forward, the Public Examinations (Prevention of Unfair Means) Act, 2024, has limitations that need addressing for greater effectiveness.
 - **Firstly**, Section 2(k) narrowly defines "public examination," limiting its scope to exams conducted by public examination authorities or listed by the central government.
 - **Secondly**, Section 12(2) allows the central government to involve central investigation agencies, a provision potentially subject to legal challenges given policing falls under state jurisdiction. Even when the Central Bureau of Investigation (CBI) is involved, it requires state

government consent under the Delhi Special Police Establishment (DSPE) Act, 1946, Section 6.

- **Thirdly**, penalties under the act range from three to five years for most offenders, with fines up to ₹1 crore for service providers using unfair means. Offences committed by organized crime members carry stiffer penalties of five to ten years imprisonment and a ₹1 crore fine.
- **Fourthly**, the law lacks provisions for conducting re-examinations in cases of cancellations due to unfair means, nor does it specify timelines for such re-examinations. Establishing a dedicated regulatory and investigative authority focused on addressing offences outlined in the act is crucial.

● **Unchecked Anomalies and Discrepancies:**

Amid student concerns, the NTA (2024) attributed the surge in perfect scores this year to an increased candidate pool. However, this explanation fails to address consistent rises in exam participation since 2019, excluding 2020 due to COVID-19. The sharp rise in cutoff scores this year has raised significant doubts about the fairness of the examination process. For instance, a score of 645 in 2023 secured a rank of approximately 8,000, whereas this year, it plummeted to nearly 34,000—a fourfold increase unprecedented in NEET history.

- Moreover, the unprecedented occurrence of 67 perfect scorers raises further questions, particularly when compared to previous years with significantly fewer top achievers. Transparency concerns persist, exacerbated by the NTA initially withholding grace marks information and disclosing precise allocations only for the top 100 rankers. Such opacity undermines student trust, crucial for examinations like JEE and CUET conducted by the NTA.

● **Inadequate Relief for Students:**

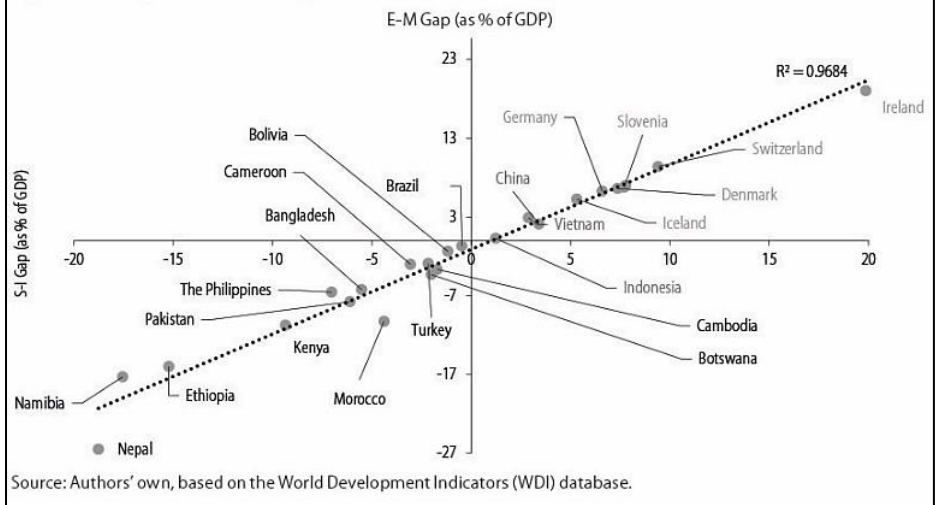
Despite mounting public pressure, the Union Education Minister acknowledged irregularities and accepted "moral responsibility" only after widespread protests, social media backlash, and multiple PILs and writ petitions in courts. In response, the Ministry of Education constituted a seven-member committee led by former ISRO chief K Radhakrishnan to propose examination process reforms, enhance data security, and restructure NTA operations. Additionally, a CBI inquiry into the NEET debacle was ordered on June 22, 2024.

- However, these actions raise a fundamental question: **should citizens need to resort to courts to prompt government action?** The belated enforcement of the Public Examinations (Prevention

of Unfair Means) Act, 2024, following its passage in the budget session and presidential assent in February 2024, further raises doubts about the government's commitment to promptly addressing exam integrity issues.

- As India pursues economic growth and technological advancement, it must prioritize the educational aspirations of its youth, particularly in its 75th year of independence. Upholding a just and inclusive educational system that nurtures youth aspirations is essential, echoing the sentiment that national progress loses meaning without a reliable education system.

Figure 2: Saving–Investment Gap and Trade Balance of Selected Economies



- **High Stakes:** Extensive research underscores how exam paper leaks significantly affect student academic performance and psychological well-being, eroding trust in academic integrity and the education system's credibility. The words engraved at the main entrance of a South African university poignantly illustrate the profound consequences of compromised education systems. The NEET exam's significance extends beyond personal academic ambitions, directly influencing India's healthcare infrastructure by ensuring only the most qualified students enter the medical profession. Rigorous and fair selection processes are essential for maintaining high standards in medical education, crucial for healthcare quality, medical research advancement, and effective health crisis response.

Conclusion: The issue of paper leaks in competitive exams like NEET poses a severe threat to India's education system and healthcare infrastructure, impacting the aspirations of young students and their families. Amid systemic loopholes, student suicides following this year's NEET results underscore the urgent need for robust reforms and decisive government action. As the Supreme Court deliberates on these matters, the fate of justice rests once more in its hands.

Navigating the Dual Challenges of International Trade

Developing countries grapple with dual challenges in international markets. **Firstly**, they must achieve a favorable trade balance while balancing domestic investment. **Secondly**, they face the daunting task of reaching potential buyers efficiently amidst intense global competition and regulatory hurdles.

Trade Balance and Challenges for Developing Countries

- **Importance of Trade Balance:** Developing countries aim to achieve a favorable trade balance by exporting more than they import, which helps in generating foreign exchange reserves.
- **Savings-Investment Gap:** This gap determines a country's ability to save and invest domestically versus exporting capital. A negative gap, as observed in India, indicates higher investment than savings, resulting in a trade deficit.
- **India's Scenario:** India's trade balance has been negative (trade deficit) for most of the past decade due to higher investment compared to savings. This deficit necessitates foreign capital inflows to finance, impacting the exchange rate and competitiveness.
- **Challenges in International Trade:** Developing countries face stiff competition from each other, often engaging in price competition and dealing with trade barriers like tariffs and non-tariff measures.
- **Effect of Regulatory Standards:** Compliance with stringent international standards increases export costs for developing nations, affecting their competitiveness. Countries like India struggle to meet these standards consistently across industries like textiles, agriculture, and electronics.

Impact of Public Debt on Economic Growth

- **Rising Public Debt:** Globally, public debt has increased significantly, exacerbated by crises like the global financial crisis and the COVID-19 pandemic. This has strained government finances and affected spending on essential sectors like education and health.
- **Debt-to-GDP Ratio:** Countries like the US, China, and India have seen their debt-to-GDP ratios rise, indicating higher indebtedness relative to their economic output.
- **Interest Payments:** The cost of servicing public debt has increased, with some countries spending more on interest payments than on social investments. This restricts fiscal space for development and economic growth.
- **External Debt Dynamics:** Some countries rely heavily on external creditors, exposing them to risks associated with fluctuating interest rates and repayment obligations.

Policy Recommendations

- **Enhancing Savings and Investment:** Developing countries need policies to boost domestic savings and channel investments into productive sectors to support sustainable economic growth.
- **Addressing Trade Barriers:** Efforts to reduce trade barriers, harmonize regulations, and improve infrastructure can enhance export competitiveness.
- **Debt Management:** Governments should adopt prudent fiscal policies to manage public debt effectively, including strategies to lower borrowing costs and reduce reliance on external creditors.
- **Global Coordination:** There's a need for international cooperation to address trade challenges and debt sustainability, ensuring fairer global economic participation for developing countries.

Conclusion: Developing countries like India need a balanced approach to promote domestic investments while enhancing export competitiveness to achieve sustainable economic growth. The intense competition in global markets requires developing countries to innovate, improve quality standards, and manage costs effectively to maintain market share. Policymakers should focus on enhancing savings rates, addressing regulatory barriers, and promoting infrastructure development to overcome trade deficits and enhance global competitiveness.



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